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# **Understanding the Microfoundations of Environmental Improvement in SMEs: A Comparative Analysis of Pakistan's Leather Industry**

**A thesis submitted for the degree of Doctor of Philosophy**

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# Table of Contents

<b>Table of Contents .....</b>	<b>i</b>
<b>List of Tables .....</b>	<b>vi</b>
<b>List of Figures .....</b>	<b>viii</b>
<b>Dedication .....</b>	<b>ix</b>
<b>Acknowledgements.....</b>	<b>x</b>
<b>Abstract.....</b>	<b>xi</b>
<b>Chapter 1    Introduction .....</b>	<b>1</b>
1.1    Context of this research .....	2
1.2    Rationale for this study .....	5
1.3    Research question, aim and objectives .....	11
1.3.1    Main research question .....	11
1.3.2    Aim of this research .....	12
1.3.3    Objectives of this study.....	12
1.4    The scope and limitations of the study.....	12
1.5    Pakistan’s leather industry: background and institutional environment .....	14
1.5.1    Emergence of leather industry in Pakistan .....	14
1.5.2    Institutional environment for the leather industry .....	18
1.5.3    Environmental implications of Pakistan’s leather industry and the role of institutions.....	19
1.6    Structure of the thesis .....	28
<b>Chapter 2    Literature review.....</b>	<b>31</b>
2.1    Introduction.....	31
2.2    Environmental practices and strategies of SMEs .....	33
2.3    Drivers of environmental improvement in SMEs .....	36
2.3.1    Compliance with regulation .....	37
2.3.2    Economic gains and competitiveness.....	41
2.3.3    Ethical values of SME owner-managers.....	45
2.3.4    Intermediary organisations driving SMEs for environmental improvement.	47
2.4    Resources, capabilities and environmental practices in SMEs .....	51

2.4.1	Barriers to environmental improvement in SMEs.....	53
2.4.2	Enablers of environmental improvement in SMEs.....	58
2.5	Contextualising the problem and developing research agenda for this study .....	68
2.6	Theoretical frameworks underpinning this study – a review .....	71
2.6.1	Institutional theory .....	73
2.6.2	Resource-based view of the firm (RBV) .....	80
2.6.3	Natural-resource-based view of the firm (NRBV) .....	83
2.6.4	Dynamic capabilities framework (DCs) .....	86
2.7	Chapter summary .....	95
<b>Chapter 3</b>	<b>Methodology and research methods .....</b>	<b>96</b>
3.1	Introduction.....	96
3.2	Research philosophy: contrasting traditions of social science .....	97
3.2.1	Research approach of this study .....	101
3.3	Research design – options for a researcher.....	105
3.3.1	The research design of this study.....	107
3.3.2	The unit of analysis and the research cases.....	109
3.3.3	The sampling strategy.....	133
3.3.4	The research methods of this study .....	138
3.4	Ethical considerations of the study .....	157
3.5	Chapter summary .....	159
<b>Chapter 4</b>	<b>Within-case and cross-case analysis of leatherworking SMEs in Pakistan.....</b>	<b>161</b>
4.1	Introduction.....	161
4.2	Environmental practices of sample firms .....	163
4.2.1	Environmentally progressive SMEs .....	167
4.2.2	Environmentally moderate SMEs .....	177
4.2.3	Environmentally distanced SMEs .....	190
4.3	Chapter summary .....	198
<b>Chapter 5</b>	<b>Understanding multilevel environmental drivers in environmentally progressive and moderate SMEs .....</b>	<b>200</b>
5.1	Introduction.....	200
5.2	Identifying the multilevel factors driving environmental responsibility in environmentally progressive and moderate SMEs .....	204

5.3	Why environmentally progressive and moderate SMEs adopt environmental practices? .....	209
5.3.1	Customers' requirements and industry dynamics .....	210
5.3.2	Regulations .....	218
5.3.3	Intermediary organisations .....	223
5.3.4	Sustainability-driven values .....	230
5.3.5	Financial benefits .....	235
5.3.6	Desire for image building .....	241
5.4	Chapter summary .....	245
<b>Chapter 6 Dynamic capabilities for environmental improvement in environmentally progressive and moderate SMEs .....</b>		<b>249</b>
6.1	Introduction .....	249
6.2	Ecological learning capability .....	253
6.2.1	Developing ecological learning through knowledge exploitation .....	254
6.2.2	Developing ecological learning through knowledge exploration .....	272
6.3	Capability for seizing environmental opportunities .....	284
6.3.1	Asset selection and deployment for environmental adaptation .....	285
6.3.2	Implementing sustainability-oriented process innovations .....	299
6.4	Enterprise reconfiguration capability .....	310
6.4.1	Flexibility and openness .....	315
6.4.2	Incremental learning for organisational reconfiguration .....	317
6.4.3	Environmental management system .....	318
6.4.4	Networks and enterprise reconfiguration .....	321
6.5	Chapter summary .....	324
<b>Chapter 7 Barriers to environmental improvement in environmentally progressive and moderate SMEs .....</b>		<b>328</b>
7.1	Introduction .....	328
7.2	Internal environmental barriers .....	330
7.2.1	Financial constraints .....	333
7.2.2	Labour-related barriers .....	335
7.2.3	Shortage of physical space .....	340
7.3	External environmental barriers .....	342

7.3.1	Policy barriers .....	345
7.3.2	Infrastructural barriers.....	350
7.3.3	Societal barriers .....	354
7.3.4	Inconsistent support from some intermediary organisations .....	356
7.4	Chapter summary .....	360
<b>Chapter 8</b>	<b>Concluding discussion and implications .....</b>	<b>362</b>
8.1	Introduction.....	362
8.2	Main findings and discussion .....	364
8.2.1	Environmental practices and behaviour of leatherworking SMEs .....	365
8.2.2	Drivers of environmental improvement in leatherworking SMEs .....	367
8.2.3	Environmental capabilities of leatherworking SMEs.....	375
8.2.4	Barriers to environmental improvement in leatherworking SMEs .....	390
8.3	Contributions of the study .....	395
8.3.1	Theoretical contribution .....	395
8.3.2	Methodological contribution .....	398
8.3.3	Empirical contribution .....	400
8.3.4	Practical contribution .....	402
8.4	Limitations of the study .....	404
8.5	Future research .....	407
8.6	Recommendations from the study.....	408
8.7	Final reflections on the study.....	413
<b>References.....</b>		<b>415</b>
<b>Appendices.....</b>		<b>440</b>
Appendix-I: Resources and capabilities of firms .....		440
Appendix-II: Supply chain positioning of sample firms .....		446
Appendix-III: Interview protocol for SMEs .....		454
Appendix-IV: Interview protocol for institutions/other industry stakeholders .....		455
Appendix-V: An illustration of email sent out by PTA in support of recruiting study participants .....		456
Appendix-VI: Project information sheet and consent request document.....		457
Appendix-VII: An illustration of email correspondence by the researcher for scheduling interviews .....		458

Appendix-VIII: Illustrations of NVivo project .....	459
Appendix-IX: A representative node from NVivo – Customer requirements/satisfaction .....	460
Appendix-X: All nodes from a representative case SME 7 .....	467
Appendix-XI: Ethical approval .....	481
Appendix-XII: An illustration of fieldwork journal .....	482
Appendix-XIII: Representative photographs from field visits.....	483

## List of Tables

Table 1.1: Pakistan's major exports (percentage share) .....	17
Table 1.2: Environmental initiatives of Cleaner Production Centre (CPC) .....	25
Table 1.3: Environmental projects of Cleaner Production Institute (CPI) .....	25
Table 2.1: Sources of literature search .....	31
Table 2.2: Summary of the literature on environmental drivers in SMEs .....	49
Table 2.3: Distinction between resources, capabilities and dynamic capabilities .....	52
Table 2.4: Summary of literature on environmental barriers in SMEs.....	57
Table 2.5: Enablers of environmental improvement in SMEs.....	67
Table 2.6: Summary of the literature streams on environmental practices in SMEs .....	69
Table 3.1: Strengths and weaknesses of different epistemologies.....	100
Table 3.2: Representative characteristics of research designs .....	106
Table 3.3: Criteria for choosing an appropriate research design .....	108
Table 3.4: Demographic profiles of sample firms.....	111
Table 3.5: Summary of supply chain positioning of sample firms.....	127
Table 3.6: Other stakeholders of Pakistan's leather industry interviewed for this study .	131
Table 3.7: Non-probability sampling techniques .....	134
Table 3.8: Phases of data analysis .....	152
Table 4.1: Three categories of sample firms as per their environmental behaviour .....	162
Table 4.2: Summary of environmental initiatives of sample leatherworking SMEs .....	165
Table 4.3: Within case evidence about environmental commitment, pollution prevention and pollution control measures in environmentally progressive SMEs .....	170
Table 4.4: Within case evidence on technology adoption measures in environmentally progressive .....	172
Table 4.5: Within case evidence on R&D initiatives of environmentally progressive SMEs .....	173



Table 4.6: Within case evidence on environmental collaboration for advancing environmental learning in environmentally progressive SMEs .....	174
Table 4.7: Within case evidence on the status of formal environmental management systems in environmentally progressive SMEs .....	177
Table 4.8: Within case evidence on pollution prevention measures in environmentally moderate SMEs.....	180
Table 4.9: Within case evidence on R&D initiatives of environmentally moderate SMEs	183
Table 4.10: Within case evidence on the initiatives for developing eco-literacy skills amongst human resources in environmentally moderate SMEs .....	186
Table 4.11: Within case evidence on cleaner technology adoption initiatives in environmentally moderate SMEs .....	188
Table 4.12: Within case evidence on reactive environmental measures of environmentally distanced SMEs .....	191
Table 4.13: Within case evidence from environmentally distanced SMEs avoiding discussion on environmental issues .....	192

## List of Figures

Figure 1.1: Geographical concentration of leatherworking firms in Pakistan .....	15
Figure 1.2: Leather exports from Pakistan by destination .....	17
Figure 3.1: Main supply chain stages of leather production .....	125
Figure 3.2: Development process of interview questions .....	142
Figure 3.3: An illustration of data structure .....	156
Figure 5.1: Isomorphic pressures driving environmental improvement in environmentally progressive and moderate SMEs .....	203
Figure 5.2: Data structure informing the identification of multilevel environmental drivers in environmentally progressive and moderate leatherworking SMEs .....	205
Figure 5.3: Interactions between multilevel environmental drivers .....	208
Figure 6.1: Data structure for ecological learning through knowledge exploitation .....	256
Figure 6.2: Data structure for ecological learning through knowledge exploration .....	274
Figure 6.3: Data structure for asset selection and deployment for environmental adaptation .....	287
Figure 6.4: Data structure for sustainability-oriented innovations .....	301
Figure 6.5: Data structure for enterprise reconfiguration capability .....	314
Figure 7.1: Data structure for internal environmental barriers .....	332
Figure 7.2: Data structure for external environmental barriers .....	344
Figure 8.1: Isomorphic pressures driving environmental improvement in environmentally progressive and moderate SMEs .....	368
Figure 8.2: Environmental capabilities and their microfoundations .....	379

## **Dedication**

**I dedicate this thesis to my parents and teachers.**

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## **Abstract**

This qualitative study examines the environmental behaviour of leatherworking SMEs in Pakistan. It investigates the environmental drivers, enablers and barriers in these firms. The study makes an empirical contribution by examining an under-researched developing economy context, Pakistan, which has distinct institutional settings compared to many other countries, especially the developed ones. It also offers a methodological contribution by demonstrating that a hybrid theoretical framework informed by institutional theory, resource-based view, natural-resource-based view and dynamic capabilities perspective offers a better approach to develop the holistic and in-depth understanding of the environmental behaviour of SMEs. It enables the researcher to effectively capture the interactive effect of internal and external factors on the environmental transformation of SMEs. Grounded analysis of interview data has revealed that multilevel (micro-meso-macro) factors, such as environmental requirements of international customers, regulations of export markets, intermediary organisations and peers, operate in conjunction to exert the coercive, normative and mimetic isomorphic pressures on leatherworking SMEs to behave environmentally responsibly. Sustainability values of owner-managers, financial benefits and aspirations for image building also drive these firms to reduce their environmental footprints. Contributing theoretically, the study finds that dynamic capabilities for ecological learning, seizing environmental opportunities and enterprise reconfiguration enable environmentally progressive and moderate SMEs to reduce their pollution load. Social capital, environmentally proactive owner-managers and support programmes of cleaner production centres serve as key microfoundations to these capabilities. More specifically, due to the absence of effective formal institutional support, cleaner production centres have acted as the (informal) compensatory institutional

structures and proto-institutional sponsors striving to institutionalise cleaner production practices in the leather industry. Through developing 'eco-literacy' skills amongst SME owners, managers and employees they have been motivating and enabling them to adopt innovative eco-friendly production processes and cleaner technologies. Some other capabilities including pollution prevention, product stewardship, absorptive capacity and strategic proactivity serve as precursors to the presence of these capabilities. Policy implications relate to addressing the financial barriers and institutional 'gaps', developing human resources and infrastructure, and better management of tannery clusters.

## Chapter 1 Introduction

This thesis investigates the extent to which multilevel factors (micro-meso-macro) exert isomorphic pressures (coercive, normative and mimetic) on leatherworking SMEs in Pakistan to behave environmentally responsibly, and the dynamic capabilities that enable these firms to reduce their environmental footprints in response. In this process, the study examines the microfoundations<sup>1</sup> (Felin et al., 2015; Barney and Felin, 2013; Felin et al., 2012; Teece, 2007) that underpin the environmental capabilities in leatherworking SMEs. In addition, this research also investigates the environmental barriers that limit the adoption of environmental practices in these firms.

A number of reasons underpin the choice for undertaking this research. Previous studies examining the environmental behaviour of SMEs have considered environmental drivers as isolated factors or independent from each other (e.g. Williams and Schaefer, 2013; Wilson et al., 2012; Williamson et al., 2006) whereas in practice they are more likely to operate in tandem (Hamann et al., 2015; Parry, 2012). Moreover, some recent studies also call for examining the interactive effects of multilevel factors (micro-meso-macro) on environmental behaviour of firms (Hamann et al., 2015; Muñoz and Dimov, 2015; Sarkis et al., 2011). At the same time, this study responds to the calls for undertaking research investigating enabling factors of environmental improvement in SMEs (Halme and Korpela, 2014; Hofmann et al., 2012; Parry, 2012) because extant literature does not provide

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<sup>1</sup> The phenomenon of researching microfoundations relates to unpacking 'collective concepts to understand how individual-level factors impact organizations, how the interaction of individuals leads to emergent, collective, and organization-level outcomes and performance, and how relations between macro variables are mediated by micro actions and interactions' (Felin et al., 2015, p. 576). While explicating the microfoundations of dynamic capabilities of the firm, Teece (2007, p. 1319) has argued that this phenomenon relates to 'the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines' which 'undergird enterprise-level sensing, seizing, and reconfiguring capacities'.

sufficient insights about the resources, capabilities and underlying processes enabling these firms to reduce their environmental footprints. Finally, the choice of Pakistan as a country context emanates from the need for research to examine the environmental behaviour of SMEs in developing economies, which have distinct institutional settings (Section 1.5) compared to developed countries, so that this phenomenon can be understood at the global level (Jamali et al., 2015; Hamann et al., 2015; Spence and Painter-Morland, 2010).

This introductory chapter of the thesis explains the context of this study in Section 1.1. Section 1.2 substantiates the relevance and importance of research into the environmental behaviour of SMEs in developing economies. The research question, aim and objectives of the study, which are drawn from a critical review of the extant literature (Chapter 2), are in turn elaborated in Section 1.3. Section 1.4 outlines the scope and acknowledges the limitations of this research. Background of Pakistan's leather industry, its economic and environmental implications alongside institutional structure are then presented in Section 1.5. Finally, Section 1.6 summarises the structure of the thesis.

## **1.1 Context of this research**

Across the globe, considering the burgeoning environmental issues, different stakeholders are urging private sector firms to reduce their environmental footprints. These stakeholders include supply chain partners (Gold et al., 2010), customers (Tilley, 1999a), employees (Castka et al., 2004), local communities (Lund-Thomsen, 2009) and third sector agents (Revell and Blackburn, 2007) as well as public authorities like local and federal governments (Blundel et al., 2013; Parker et al., 2009; Vickers et al., 2009) and different



international bodies such as United Nations Industrial Development Organisation (UNIDO) and United States Agency for International Development (USAID) (Vogt and Hassan, 2011).

Facing pressure from their stakeholders, some firms have started to take environmental protection measures (Hamann et al., 2015; Brammer et al., 2012; Revell et al., 2010; Menguc et al., 2010; Bansal and Roth, 2000). Also, governments around the globe are found to take some actions to promote a culture of sustainable business practices (Blundel et al., 2013), for this purpose some of them receiving financial and technical assistance from supranational bodies (Ortolano et al., 2014; Lund-Thomsen, 2009). However, the level of commitment to protect the natural environment is not uniform across countries, industry sectors and firms. While some governments are taking up environmental agenda relatively seriously, for others it appears to remain a lower level priority (Blundel et al., 2013; Parker et al., 2009; Tewari and Pillai, 2005). Similarly, some firms and industry sectors are adopting proactive environmental strategies compared to their counterparts who are contented with a passive or reactive approach to addressing environmental issues (Sharma and Sharma, 2011; Revell et al., 2010; Parker et al., 2009; Sharma et al., 2007; Hahn and Scheermesser, 2006; Tilley, 1999b; Sharma and Vredenburg, 1998). Such a diversity in environmental considerations is generally attributed to the heterogeneity in individuals' values (Hamann et al., 2015; Williams and Schaefer, 2013; Hammann et al., 2009; Hemingway and MacLagan, 2004), resource and capability endowment of firms (Halme and Korpela, 2014; Hofmann et al., 2012; Parry, 2012; Gadenne et al., 2009; Sharma et al., 2007; Aragon-Correa and Sharma, 2003; Sharma and Vredenburg, 1998) and institutional structures of countries (Littlewood and Holt, 2015a; Jamali et al., 2015; Littlewood and Holt, 2015b; Allet, 2015; Lund-Thomsen, 2009; Tewari and Pillai, 2005; Ciccozzi et al., 2003). The diversity in environmental behaviour of firms across industry sectors and countries has

prompted researchers, practitioners and policy makers to search for ways of promoting the environmental engagement of firms, alongside conventional commercial imperatives (Blundel et al., 2013; Shepherd and Patzelt, 2011; Hockerts and Wüstenhagen, 2010; Battaglia et al., 2010; Parrish, 2010; Kuckertz and Wagner, 2010; Cohen and Winn, 2007; Dean and McMullen, 2007). There is hence an increasing body of academic research that investigates environmental drivers, barriers and enablers in private sector enterprises. However, most studies have examined the dynamics of environmental behaviour in large size businesses (e.g. Menguc et al., 2010; Bansal and Roth, 2000; Aragón-Correa, 1998; Russo and Fouts, 1997). As a result, research on sustainability in SMEs remains more limited despite the fact that these firms also have significant environmental implications (Parker et al., 2009).

Around the world, SMEs are regarded as an integral part of economies. Although these firms are appreciated for their considerable socioeconomic and technological contributions, the nature and scale of their environmental impacts are also identified to be substantial (Blundel et al., 2013; Parker et al., 2009; Vickers et al., 2009; Williamson et al., 2006). For instance, a study conducted by European researchers shows that in the European territory SMEs are responsible for almost 64% of total industrial pollution, while they also contribute about 60-70% to total industrial waste (Calogirou et al., 2010). Similarly, in England and Wales, it is estimated that SMEs generate almost 60% of commercial waste (EA, 2006, p. 9).

While quantified measures of environmental impacts of SMEs are available for some developed countries, such estimates are largely absent in the context of developing economies. However, significant environmental issues arise from the operational activities

of SMEs in these countries as well. For instance, in Pakistan SMEs are found to have been causing environmental problems through using toxic chemicals, generating high volumes of solid wastes and discharging contaminated wastewater which causes health problems for employees and local communities in addition to harming marine life and damaging agricultural areas (Lund-Thomsen, 2009; Malik, 2002; Khan, 1995).

Since there are considerable environmental implications attached with the operations of SMEs both in developed and developing economies, it substantiates the need for investigating what might drive these firms and to what extent to reduce their environmental footprints, and most importantly what might enable them to become environmentally responsible enterprises. This study addresses the need for undertaking such research.

## **1.2 Rationale for this study**

The majority of prior greening business literature has examined the environmental behaviour of large size firms (Blundel et al., 2013; Parker et al., 2009; Walker et al., 2008; Worthington and Patton, 2005). At the same time, the focal point of investigations has usually been developed countries. As a result, literature looking into the environmental behaviour of SMEs not only remains limited in terms of published studies but also in industry and country contexts (Jamali et al., 2015; Hamann et al., 2015; Spence and Painter-Morland, 2010). One possible reason for this seems to be an inclination of government interventions towards improving sustainable business practices in large size firms (Blundel et al., 2013; Parker et al., 2009). It may be because, compared to resource deficient SMEs, large size enterprises are considered to possess enough resources and capabilities enabling them to effectively respond to public sector interventions (Hammann et al., 2009; Tilley,

2000). Another possibility is that SMEs are generally regarded 'less worthy, less needy or less relevant research subject compared to large firms' (Tilley, 2000, p. 33). Moreover, lack of well-developed and appropriate research methodologies to examine the environmental behaviour of SMEs in addition to relatively limited access to information, especially in developing economies, about the environmental engagement of these firms are also regarded as constraints limiting research in this nascent area (Tilley, 2000).

SMEs are not smaller versions of large size firms. A number of characteristics differentiate them from their large size counterparts. For example, in general, SMEs are rarely richly endowed with resources (Williams and Schaefer, 2013; Hammann et al., 2009). This resource scarcity limits their ability to develop and follow long term plans systematically (Hammann et al., 2009). However, owner-managers of SMEs often enjoy more freedom for decision making as compared to the managers of large size firms (Hammann et al., 2009). The influence of personal characteristics of owner-managers on overall vision and objectives of firms would be larger in the case of SMEs (Holt, 2012; Hammann et al., 2009). The responsibility of success or failure of a business is largely attributed to owner-managers in SMEs rather than to managers as would be the case in large size firms (Williams and Schaefer, 2013; Hammann et al., 2009). Relative to large size firms, SMEs have limited customer base (Williams and Schaefer, 2013; Holt, 2012). These general differences also have implications for the environmental behaviour of these firms. For instance, in contrast to large size firms, SMEs rarely develop and follow codified environmental policies (Hammann et al., 2009; Spence, 2007). On the other hand, personal priorities and values of owner-managers often determine environmental preferences of SMEs (Hamann et al., 2015; Williams and Schaefer, 2013; Holt, 2012; Spence, 2007). At the same time, due to

possessing limited resources these firms generally find it challenging to make environmental investments (Williams and Schaefer, 2013; Spence, 2007).

Having discussed some distinctions between SMEs and large size firms, it becomes evident that findings from and issues pertaining to environmental management in large size enterprises cannot be regarded as readily applicable to SMEs. Due to this, researchers have started to investigate environmental management practices of SMEs (e.g. Blundel et al., 2013; Williams and Schaefer, 2013; Brammer et al., 2012; Hofmann et al., 2012; Cordano et al., 2010; Lewis and Cassells, 2010; Gadenne et al., 2009; van Berkel, 2007; Lawrence et al., 2006). While much of this research focuses on developed countries such as the UK, USA, Australia and New Zealand, relatively recently studies from emerging and developing countries have also started to establish their roots in greening literature on SMEs (e.g. Hamann et al., 2015; Yu and Bell, 2007; Studer et al., 2006). Nevertheless, such studies remain in a minority.

Developing economies are characterised by a wide variety of institutional mechanisms, which not only make them distinct from developed countries but also from each other. In the majority of developed countries, institutional structures are strong, and the business environment is not hugely uncertain which reduces the cost of doing business in these economies (Meyer et al., 2009). National governments in these countries nurture entrepreneurial activity through various business support policies (Yamakawa et al., 2008). For example, they have been devising and implementing support mechanisms for helping SMEs to reduce their environmental footprints (Blundel et al., 2013; Battaglia et al., 2010; Pimenova and van der Vorst, 2004). In contrast, institutional frameworks in developing economies remain weaker, primarily because of the internal capacity constraints of formal

institutes (Hamann et al., 2015; Allet, 2015; Jamali et al., 2015; Vogt and Hassan, 2011; Aftab et al., 2000). It makes the business environment in these countries less stable. SMEs in developing countries are generally discriminated against the large size and multinational enterprises (Yamakawa et al., 2008). For instance, formal institutes in these countries extend less support to SMEs for addressing their environmental issues (Jamali et al., 2015). Not only are there institutional differences between the developed and developing countries, these can also be observed across developing economies. Some of them have stringent environmental regulations, while others have fewer regulations and/or do not enforce them as rigorously resulting in the varied propensity to environmental compliance of SMEs (Ortolano et al., 2014; Yu and Bell, 2007; Tewari and Pillai, 2005). Some national governments in developing economies offer better support for SMEs to improve their environmental performance while others provide little support (Ortolano et al., 2014; Hsu and Cheng, 2012; Lund-Thomsen, 2009; Tewari and Pillai, 2005; Ciccozzi et al., 2003). In addition, cultural and religious values (Abdelzaher and Abdelzaher, 2015) and different levels of environmentally relevant resources and capabilities are also identified as possible explanations for the observed variability in environmental behaviour of firms in these countries (Wahga et al., 2015; Hsu and Cheng, 2012; Ciccozzi et al., 2003). In spite of all this, SMEs in developing countries are appreciated for curtailing poverty, creating job opportunities, stimulating economic growth and addressing environmental issues to some extent (Hussain et al., 2012). However, their potential to perform a substantial role in addressing socioeconomic and environmental issues is generally constrained by lack of support from their national governments and resource scarcity, something which is more evident in developing than in developed countries (Abor and Quartey, 2010). In order to address such challenges, SMEs in some developing countries have started to collaborate

with other institutional actors, such as environmental support organisations, industry associations and international sponsors, for finding ways to minimise their environmental footprints (Ortolano et al., 2014; Lund-Thomsen, 2009).

Given the variability in institutional structures and business support mechanisms across countries, moving beyond firm-specific analyses is important to gain a grounded understanding of how the environmental behaviour of SMEs is mediated by relevant institutional and contextual factors (Littlewood and Holt, 2015a; Jamali et al., 2015; Littlewood and Holt, 2015b). Such a research can be a catalyst for identifying, testing and developing theoretical frameworks that are suitable for studying the environmental behaviour of SMEs. For instance, how in the face of pervasive institutional challenges in developing countries different actors of the organisational field collaborate to advance environmental practices in SMEs can bring new insights to institutional theory. Similarly, dynamic capabilities framework which attaches sufficient importance to the influence of volatility in markets on capability development in firms, in addition to their internal factors, can also benefit from such research. For example, an investigation of the interactive effect of institutional settings and firm level factors on environmental capabilities of SMEs in developing countries can help extend the application of this theoretical lens in the domain of greening business literature. It can also show the value of using hybrid theoretical frameworks (institutional theory and dynamic capabilities framework) for examining the environmental behaviour of SMEs. Since the institutional structure of a country adds to the peculiarities of its SMEs, it substantiates the need for research that looks into the environmental behaviour of these firms in the context of developing economies which have remained relatively under-researched compared to developed countries. Such a research can indeed contribute to extant literature both empirically and theoretically.

While differences between firm size and institutional and business contexts prevail, it has been found that many SMEs now take at least some environmental protection measures (Hamann et al., 2015; Williams and Schaefer, 2013; Brammer et al., 2012; Cassells and Lewis, 2011; Revell et al., 2010). In this regard, prior literature identifies different motivations for environmental improvement in these firms. The leading ones include; compliance with environmental regulations (e.g. Revell et al., 2010; Williamson et al., 2006), expectations for increased economic and competitiveness gains (e.g. Parry, 2012; Simpson et al., 2004) and personal ethical values of owner-managers (e.g. Williams and Schaefer, 2013; Battisti and Perry, 2011). However, generally, these factors are examined as piecemeal factors whereas in practice they are more likely to affect the environmental behaviour of SMEs interactively. While recently some researchers have started to investigate the interactive effect of environmental motivations on environmental behaviour of SMEs (e.g. Hamann et al., 2015), there remains a considerable need for research to examine multilevel factors driving these firms to behave environmentally responsibly. At the same time, previous literature only provides very limited insights into how SMEs become able to adopt environmental practices. As a result, our knowledge and understanding of the resources, capabilities and processes that ultimately enable these firms to engage with environmental issues effectively remains limited (Halme and Korpela, 2014; Hofmann et al., 2012; Parry, 2012). Therefore, there is a substantial need for research that uncovers environmental enablers in SMEs.

In order to address the gaps in extant literature as highlighted above and discussed in detail in Chapter 2, this research investigates the dynamics of environmental behaviour of leatherworking SMEs in Pakistan. The research question, aim and objectives that guide this study are outlined in the following section.



### **1.3 Research question, aim and objectives**

#### **1.3.1 Main research question**

The overarching research question of this qualitative study is: *To what extent do multilevel factors exert isomorphic pressures on leatherworking SMEs<sup>2</sup> in Pakistan to behave environmentally responsibly, and what enables these firms to reduce their environmental footprints in response?*

In order for this research question to be answered effectively, a set of sub-questions is generated as follows.

#### **Sub-questions**

- (a) What environmental measures do SMEs in Pakistan's leather industry take to reduce their environmental footprints?
- (b) Why do SMEs in the leather industry adopt environmental practices?
- (c) What are the resources and capabilities that enable these firms to become environmentally responsible enterprises?
- (d) What limits leatherworking SMEs from taking environmental measures?

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<sup>2</sup> See Section 3.3.2 on how SMEs are defined in this study.

### **1.3.2 Aim of this research**

Building on the overarching research question and the sub-questions, the main aim of this study is to investigate environmental drivers, enablers and barriers underpinning environmental behaviour of SMEs in Pakistan's leather industry.

### **1.3.3 Objectives of this study**

In the pursuit of its aim, informed by the social constructionist philosophical tradition (Easterby-Smith et al., 2008, p. 58-60) this study seeks to achieve the following research objectives.

1. To explore environmental practices that SMEs in Pakistan's leather industry have adopted.
2. To identify multilevel environmental drivers and investigate their interactive effect on the environmental behaviour of leatherworking SMEs.
3. To examine the resources and capabilities that enable leatherworking SMEs to reduce their pollution load.
4. To investigate the factors that limit environmental improvement in leatherworking SMEs.

## **1.4 The scope and limitations of the study**

This qualitative study investigates the environmental behaviour of leatherworking SMEs operating in two provinces in Pakistan, namely Punjab and Sindh. Like any other research, it has certain limitations.

1. The main focus of this study is on SMEs and not large size leatherworking firms. It only covers leather clusters in Punjab and Sindh provinces of Pakistan. Thus, findings of the study may not be generalisable to the whole leather industry.
2. Since this study adopts a qualitative approach and looks into the environmental behaviour of SMEs in the leather industry only, its findings may not be generalisable across industry sectors within Pakistan and beyond. However, such a research approach is regarded valuable when examining a unique context, like Pakistan having its distinct institutional structure (Section 1.5). In addition, the study also offers some theoretical generalisations.
3. Due to the absence of data bases reporting environmental practices of SMEs in Pakistan, for this study data were gathered through semi-structured face-to-face in-depth interviews. In the process, international buyers who are a major driving force for environmental improvement in leatherworking SMEs their perspective remains unexplored as all the study participants are from Pakistan. However, the researcher has made sufficient efforts to investigate the environmental requirements of international customers indirectly through the study participants.

Before moving on to presenting literature review in Chapter 2, the next section of this chapter presents the profile of Pakistan's leather industry. While it discusses the structure of the industry and its economic and environmental implications, it also highlights the features of the institutional environment in which leatherworking firms have been operating in this country.

## **1.5 Pakistan's leather industry: background and institutional environment**

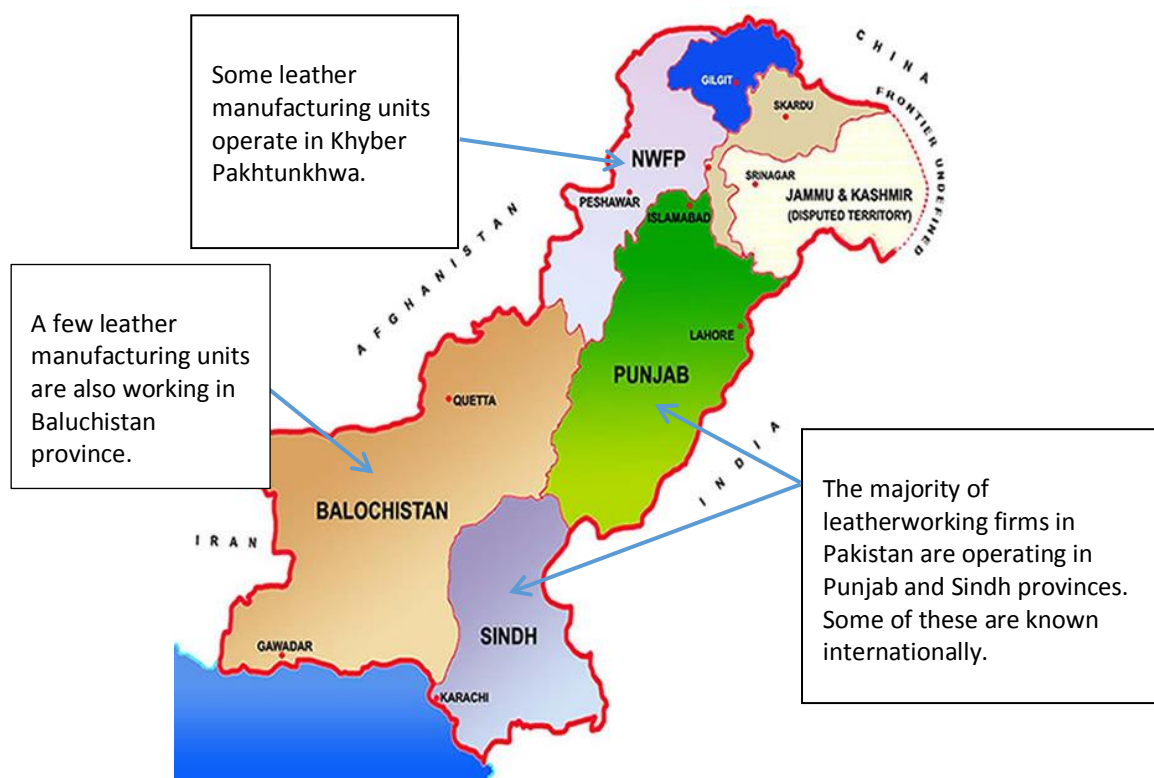
Pakistan, a country from South Asian region, is spread over an area of 796,095 sq. km, which makes it the 36th largest country on the globe. With a population of about 191.71 million people (GoP, 2014-2015, p. 199), it is the sixth most populous country in the world. Per-capita income in the country stands at \$1,512 (GoP, 2014-2015, p. 16), which is one of the macroeconomic indicators showing that it is a developing economy. Previously the dominant sectors of Pakistan's economy have been agriculture and industry. In the recent past, however, contribution to GDP from services sector has outperformed both these sectors (GoP, 2014-2015, p. 15). While the emergence of services sector is new to the country, roots of the industrial and agriculture sectors can be traced back to 1947, the year when Pakistan became an independent state. It is noteworthy that the growth of the industrial sector is interlocked with the developments in the agriculture sector. Partly, it can be assessed from the fact that two leading export earning industries, textile and leather, are largely reliant on the amount and quality of inputs coming from this sector.

### **1.5.1 Emergence of leather industry in Pakistan**

Pakistan's leather industry is as old as the country itself is. At the time of independence, there were few tanneries in the country, which were established in and around Lahore (Punjab province) and Karachi (Sindh province) regions. These were neither technologically advanced nor operationally very active. Realising that there was substantial demand for leather internationally, in the 1950s some of these tannery owners started to upgrade their technological assets for improving their operational capabilities so that they could exploit business opportunities in the global market. As the industry began to earn substantial profits, it attracted many nascent entrepreneurs. The period of the 1960s and 1970s,

therefore, saw a considerable increase in the number of leather manufacturing units in the country. New leatherworking firms were mostly established in and around Sialkot, Kasur, Multan, Gujranwalla, Sahiwal and Sheikhupura in Punjab province. The major attraction for entrepreneurs to set up businesses in this province has been easy access to raw materials, particularly animal skins and labour. Following the trend in Punjab, more tanneries were also set up in Sindh, NWFP (currently known as Khyber Pakhtunkhwa) and Baluchistan provinces. However, the main concentration of leather industry remains within the Punjab and Sindh provinces (Figure 1.1).

**Figure 1.1: Geographical concentration of leatherworking firms in Pakistan**



Source: Adapted from <http://pakistanipages.blogspot.co.uk/2011/10/map-pakistani.html>

According to a recent report (Vogt and Hassan, 2011, p. 47), there are almost 2300 units producing leather and leather related products in Pakistan. However, there are also a number of micro and small scale firms that are operating informally. Main products of the industry include wet blue (semi-manufactured leather), finished leather, leather garments, gloves and footwear. Some firms are also producing leather belts and bags.

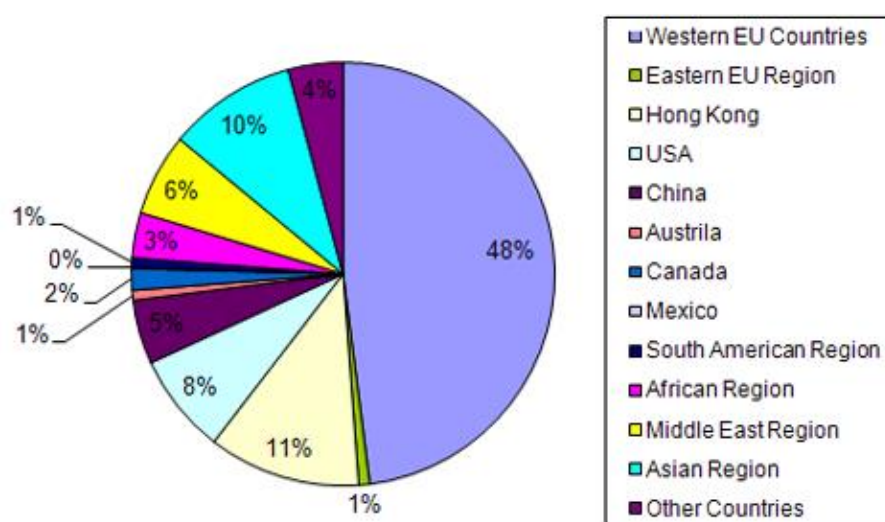
Primarily made up of SMEs, leather industry is the third largest export-earning sector for Pakistan (Table 1.1). While this industry has sufficient capacity to meet the needs of the domestic market, mainly it is an export-oriented sector. The leading importers of leather and leather related goods from Pakistan are Italy, Germany, France, China, Hong Kong, UK, and USA (PTA, 2013-2014, p. 9; Vogt and Hassan, 2011, p. 49). Some other countries such as Turkey, India, Indonesia, Spain, Bangladesh, Canada, South Africa, Australia, New Zealand and Vietnam also import leather from this country (PTA, 2013-2014, p. 9; PTA, 2012-2013, p. 9). It is however noteworthy that almost 50 percent of Pakistan's leather related exports are concentrated in the European region (Figure 1.2). While these are high paying markets, due to limited diversification in terms of export destinations the leather industry remains vulnerable to external shocks. In order to ensure sustainability in export performance, there is a need for the industry to seek penetration to new markets proactively.

**Table 1.1: Pakistan's major exports (percentage share)**

Commodity	2006-07	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	July-March	
									2013-14	2014-15 P
Cotton Manufacturers	59.7	51.9	52.6	50.6	52.9	49.6	51.6	53.1	52.9	55.4
<b>Leather **</b>	<b>5.2</b>	<b>5.8</b>	<b>5.4</b>	<b>4.5</b>	<b>4.4</b>	<b>4.4</b>	<b>4.5</b>	<b>5.1</b>	<b>4.9</b>	<b>5.1</b>
Rice	6.6	9.8	11.2	11.3	8.7	8.7	7.8	7.6	8.7	8.8
<b>Sub-Total of three Items</b>	<b>71.5</b>	<b>67.5</b>	<b>69.2</b>	<b>66.4</b>	<b>66</b>	<b>62.7</b>	<b>64.1</b>	<b>65.8</b>	<b>66.5</b>	<b>69.3</b>
Other items	28.5	32.5	30.8	33.6	34.0	37.3	35.9	34.2	33.5	30.7
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
P: Provisional, ** Leather & Leather Manufactured.										

Source: Economic Survey of Pakistan 2014-15, p.142.

**Figure 1.2: Leather exports from Pakistan by destination**



Source: [http://www.pakistantanners.org/industrial\\_statistics.html](http://www.pakistantanners.org/industrial_statistics.html), accessed on 4 June 2014.

In terms of employment contribution, it is estimated that the leather industry provides employment to almost 500,000 people directly (Vogt and Hassan, 2011, p. 47). However, many more households are also earning from this industry through working for informally established micro and small scale units. At the same time, some allied industries such as chemicals and packaging are also earning from this industry sector.

### **1.5.2 Institutional environment for the leather industry**

A number of institutions are associated with Pakistan's leather industry. Macro level institutions include governmental bodies such as the Ministry of Industries and Production (MoIP), Ministry of Commerce (MoC), Federal Board of Revenue (FBR), Pakistan Environmental Protection Agency (PEPA) and Ministry of Science and Technology (MoST). In terms of their functions, MoIP is responsible for creating an enabling environment for industrial growth in the country, focus of MoC is to improve export competitiveness of the country by enabling businesses to establish access to international markets and increase country's share in global trade, FBR looks into the matters of taxation, PEPA's responsibility is to formulate and enforce environmental regulations such as National Environmental Quality Standards (NEQS) and MoST extends R&D support to industries through Pakistan Council of Scientific and Industrial Research (PCSIR).

At meso level, the active institutional actors that operate in the organisational field of Pakistan's leather industry include industrial associations, training and educational institutes and product testing laboratories. The leading industry associations operating at the national level are Pakistan Tanners Associations (PTA), Pakistan Gloves Manufacturers and Exporters Association (PGMEA) and Pakistan Footwear Manufacturers Association (PFMA). Some industry associations are also operating at regional levels, such as Kasur



Tannery Association (KTA). The two prominent environmental support institutions are Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI). The other training and educational institutes include National Institute of Leather Technology (NILT), Institute of Leather Technology (ILT) and University of Veterinary and Animal Sciences (UVAS). At the same time, some product testing laboratories such as Société Générale de Surveillance (SGS) and Textile Testing International (Tti) are also associated with Pakistan's leather industry.

Some supranational institutions have also remained engaged with the Pakistan leather industry. These include United Nations Development Programme (UNDP), Norwegian Agency for Development and Cooperation (NORAD), Embassy of the Kingdom of Netherlands (EKN), and the European Commission (EC) - particularly through its most recent Trade Related Technical Assistance Programme (TRTA III). These international institutions have been supporting Pakistan's leather industry, both financially and technically, for addressing its environmental challenges.

### **1.5.3 Environmental implications of Pakistan's leather industry and the role of institutions**

While Pakistan's leather industry being one of the leading export earning sectors makes a significant economic contribution to the country (Table 1.1), it also has considerable environmental implications. For example, the indiscriminate discharge of contaminated wastewater and poisonous solid wastes have, in the past, been considered a major source of pollution, causing diseases in local populations, reducing the productivity of agricultural land, threatening the existence of marine life and damaging the ozone layer (Wahga et al., 2015; Lund-Thomsen, 2009; Vogt and Hassan, 2011; Khan et al., 2001). At the same time,

leatherworking firms have been using some harmful chemicals, such as Chrome VI, which when remain present in a higher percentage in leather can be carcinogenic for the end users of leather products. Due to these border environmental challenges, during the last 10 to 15 years, leatherworking firms in Pakistan have been under considerable pressure from different stakeholders, particularly from international buyers, to reduce their environmental footprints (Ortolano et al., 2014; Vogt and Hassan, 2011; Lund-Thomsen, 2009). For example, importers of leather have been requiring these firms to use environmentally less harmful chemicals, generally known as REACH<sup>3</sup> compliant inputs. REACH is a European regulation aimed at controlling the production and use of such chemicals that can be harmful to the wider natural environment.

Pakistan attracts about 50 percent of its international customers from the European region (Figure 1.2). These European customers are very sensitive towards environmental issues and therefore also require their suppliers to be responsible environmentally. When buying from other countries, they follow their own environmental standards. Therefore, those Pakistani firms that sell to the European markets are bound to observe their environmental requirements. This shows that environmental improvement of leatherworking firms in Pakistan carries great economic, social and environmental value not only for the country but also for its international trade partners.

Compared to some European and other Asian countries (e.g. Battaglia et al., 2010; Tewari and Pillai, 2005), the national government in Pakistan has not been supporting its leather industry in addressing its environmental problems very actively. The institutional ‘voids’

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<sup>3</sup> Registration, Evaluation, Authorisation and Restriction of Chemicals

(Silvestre, 2015; Parmigiani and Rivera-Santos, 2015; Khanna and Palepu, 1997) or ‘gaps’ (Littlewood and Holt, 2015b; Kolk, 2014), which appear to exist largely due to a less developed interest of governmental agencies in environmental issues (Vogt and Hassan, 2011) coupled with a lack of competency amongst the local officials responsible for monitoring the environmental performance of firms in this sector (Aftab et al., 2000), leave the enforcement of environmental regulations as ineffective (Ortolano et al., 2014). The literature makes a distinction between institutional ‘voids’ and ‘gaps’ (for details, see Section 2.6.1). While institutional ‘voids’ refer to the absence of formal institutional structures, institutional ‘gaps’ denote a state of formal institutions being existent but not mature/established enough to effectively perform their functions (Littlewood and Holt, 2015b; Kolk, 2014; Rivera-Santos et al., 2012). And Pakistan’s institutional environment corresponds more closely to the term ‘gaps’ because different government departments are there, but they are not performing their functions effectively.

While all those government institutes which are mentioned earlier (Section 1.5.2) have considerable responsibilities to support the development of leather industry, they have generally performed a passive role in this regard. For example, despite repeated requests from industry associations (PTA, 2012-2013, p. 11-16), to date, a cohesive government policy towards leather sector remains absent. Moreover, this industry sector has not been receiving sufficient incentives from the national government. Even if at some point government has announced some policy incentives they have not been implemented. For example, as some recent reports show that Ministry of Commerce (MoC) has announced to provide matching grants as 25 percent of the cost for setting up the effluent treatment plants, design centres and research labs to tanneries but no progress has been made in this regard (PTA, 2012-2013, p. 3; Vogt and Hassan, 2011, p. 50). At the same time, NEQS which

leatherworking firms are required to observe are too complex for them, especially for SMEs, to understand and comply with (PTA, 2012-2013, p. 6). Moreover, these environmental standards are quite generic instead of being specific to the leather sector.

In fact, Pakistan does not have a rich legislative history in terms of protecting the wider natural environment. The country became an independent state in 1947, and the first environment specific regulatory initiative, Pakistan Environmental Protection Ordinance (PEPO), was taken in 1983. Previously, there were certain laws containing provisions for environmental protection, but PEPO was the first one specific to the environment. The main purpose behind introducing PEPO was to establish a structure of governmental institutions to formulate and implement environmental policy in the country. Unfortunately, it happened so slowly that after almost 14 years following PEPO, in 1997, Pakistan Environmental Protection Act (PEP-Act) was passed. After the formulation of this Act, some environmental protection measures were taken. For example, the powers to implement environmental policies were taken from the federal government and rendered to provincial governments. Despite this initiative, the enforcement of environmental regulations has remained weaker, as is already mentioned, mainly because of capacity constraints of governmental institutes.

At the same time, the majority of leatherworking firms, mainly SMEs, do not seem to have the ability and know how to follow regulatory standards and practices. For example, under PEP-Act a software, Self Monitoring and Reporting Tool (SMART), was introduced with the purpose of gathering data from firms about their environmental performance. While this measure could be effective to monitor the environmental behaviour of large size firms which were in minority and had sufficient resources to designate staff to gather firm level

data and report to concerned government departments, it was hard for under-resourced SMEs to participate in such measures actively. Not only because many SME owner-managers lack capability to understand and participate in such initiatives, also the resources they possess are not sufficient for them to recruit staff specifically to look into environmental affairs of their firms.

Having realised that national government has not been taking sufficiently serious measures to support leather industry for addressing environmental issues, the national level industry associations (PTA and PGMEA) started to take extra ordinary measures to seek support from alternative platforms. In fact, they started to approach different international sponsors willing to help industries wanting to reduce their environmental footprints. The industry associations met with success when some international bodies, such as United Nations Development Programme (UNDP), Norwegian Agency for Development and Cooperation (NORAD), Embassy of the Kingdom of Netherlands (EKN), consented to extend them financial and technical support for addressing environmental issues of their sector. On knowing about fruitful efforts of the industry associations, national government also agreed to extend partial support. It is noteworthy that national government came forward to facilitate leather industry often in collaboration with international sponsors rather than taking measures independently. As an example, in 1996 UNDP extended financial and technical assistance for setting up a combined effluent treatment plant for tannery cluster in Kasur through UNIDO. The government of Pakistan (GoP) and Tannery Association Kasur (TAK) shared the cost of plant with this international sponsor. This effluent treatment plant is in operation since October 2001 and treats the wastewater of more than 250 tanneries. Later on, in 2004, another combined effluent treatment plant was set up in Karachi tannery

cluster as a result of collaborative arrangements between EKN, GoP and PTA. This wastewater treatment plant treats effluents discharged by more than 150 tanneries.

While such projects could be executed in areas where tanneries were established in the form of larger clusters, they were not feasible for other regions where tanneries were situated sparsely such as in and around Sialkot and Sheikhupura cities. In such areas, with sufficient support from international sponsors and the partial help of national government, industry associations established environmental support institutes. For example, in 2000 through a collaboration between Pakistan Gloves Manufacturers and Exporters Association (PGMEA), Norwegian Agency for Development and Cooperation (NORAD) and Trade and Development Authority of Pakistan (TDAP), Cleaner Production Centre (CPC) was set up in Sialkot. Significant financial support was extended by NORAD for this initiative. Similarly, earlier in 1997, Embassy of the Kingdom of Netherlands (EKN) collaborated with Pakistan Tanners Association (PTA) and provided generous funding for setting up Cleaner Production Institute (CPI) in order to cater environmental capacity building needs of tanneries in areas including Lahore, Kasur, Sheikhupura, Muridkey and Karachi. Table 1.2 and Table 1.3 present a summary of the key environmental interventions of CPC and CPI, respectively.

**Table 1.2: Environmental initiatives of Cleaner Production Centre (CPC)**

- Technical assistance on process improvement and reduction of pollution at source.
- Conservation of water through installation of water flow meters.
- Installation of dust collectors at buffing machines to arrest buffing dust.
- Construction of screen grit chambers to trap the sludge from effluents.
- The introduction of de-salting tables to minimise the quantity of salt in effluents.
- Establishment of chrome recovery plant.
- Establishment of environmental laboratory for analysing tannery effluents.
- Establishment of the physical testing laboratory to check physical properties of leather.
- Cleaner production training programmes for the promotion of CP techniques.
- Establishment of information centre to provide technical information about modern leather processing techniques and latest cleaner technologies.
- The introduction of environmental management systems, such as ISO 14001.
- The introduction of solid waste management systems.

Sources: PGMEA (2008-2009) and PGMEA (2003-2004)

**Table 1.3: Environmental projects of Cleaner Production Institute (CPI)**

- Environmental Technology Programme for Industries (ETPI) (1996-2001).
- The introduction of Cleaner Technologies in Tannery Clusters of Punjab (ICTP) (1998-2006).
- Cleaner Technology Programme for Korangi Tanneries (CTP-KT) (2002-2007).
- Cleaner Production Programme (CPP) (2002-2004).
- Energy Conservation in Punjab Tanneries (ECPT) (2006-2008).
- Programme of Industrial Sustainable Development (PISD) – Phase I (2007-2010).
- Sustainable and Cleaner Production in the Manufacturing Industries of Pakistan (SCI-Pak) (2009-2012).

Source: CPI (2014)

The main focus of both these environmental support institutes has been to motivate and enable leatherworking firms to adopt cleaner production practices, control the indiscriminate discharge of effluents and simultaneously improve 'eco-efficiency' (Ortolano et al., 2014; van Berkel, 2007). In this regard, CPC and CPI have been actively working on the environmental capacity building of human resources in tanneries while also introducing them to cleaner technologies through various trainings and workshops in addition to supporting them in executing cleaner production techniques by arranging on-site visits and observing their processes (Ortolano et al., 2014). It shows that to a certain extent environment support institutes, while operating as (informal) compensatory institutional structures, have been helping to address the institutional 'gaps' in Pakistan by providing the much needed support to leatherworking firms which the formal institutional set ups could not manage to offer (Kolk, 2014; Ortolano et al., 2014). These institutes have also been offering the normative pressures (DiMaggio and Powell, 1983) for leatherworking firms to adopt environmental practices (Section 5.3.3). They thus appear to be compensating for the lack of coercive institutional pressures, which have been pervasive, for example, due to the weaker enforcement of regulations in the country. Moreover, the cleaner production centres have also been generating mimetic isomorphic pressures for leatherworking firms by bringing together groups of like-minded entrepreneurs and providing them with a platform to learn from each other's experience of successfully adopting the cleaner production practices, and supporting them to collectively address the environmental challenges they have been facing (Section 5.3.3). Such an interplay between multilevel actors that underpins the advancement of environmental sustainability in leatherworking SMEs in Pakistan makes this country a particularly useful context for the present enquiry.



Realising that just adopting cleaner production techniques is not sufficient to address environmental impacts of tanneries in Sialkot, following the models of Kasur and Karachi tannery clusters, development of Sialkot Tannery Zone (STZ) is in progress. The main objectives of this environmental initiative are to develop a larger cluster of tanneries in Sialkot and then collect their effluents to a common place to treat before discharging to main drain so that agricultural areas, marine life and local populations could be protected from harmful effects of tannery wastewater while also enabling leatherworking firms to comply with NEQS and build their reputation internationally. For executing this project, Sialkot Tanneries Association Guarantee Ltd. (STAGL) is mainly seeking support from UNIDO, while national government has also agreed to extend partial support for the project.

At the same time, through its Trade Related Technical Assistance Programme (TRTA –III) the European Commission is taking measures for enabling leatherworking SMEs in Pakistan to improve their environmental behaviour (Vogt and Hassan, 2011). The aim of this environmental intervention is to enhance environmental capabilities of SMEs through skills enhancement trainings and by arranging knowledge dissemination workshops in collaboration with SME support organisations such as National Productivity Organisation (NPO) and Small and Medium Enterprise Development Authority (SMEDA) (Vogt and Hassan, 2011).

Unfortunately, the bitter reality of Pakistani context is that as soon as financial support from international sponsors comes to an end national government also terminates its support to the leather industry. This makes the sustainability of such important environmental projects questionable (Ortolano et al., 2014). For example, PGMEA is currently managing CPC by raising financial resources from tanneries but the implementation of this project at a larger

scale requires financial support from national government or some other resource rich sponsoring bodies.

It is, however, noteworthy that despite all these efforts much more still needs to be done for enabling leatherworking firms to proactively adopt cleaner production practices at a larger scale (Ortolano et al., 2014). In fact, Pakistan's leather industry still needs to go a long way towards becoming an environmentally responsible sector. As findings of a recent report (Gombault and Begeer, 2013, p. 46) also suggest, Pakistani leatherworking firms are not lagging much behind their international peers, in terms of their environmental commitments however considerable problems remain; for example, sulphides and chromium from tannery effluents in the country are reported to be about 20 to 100 times greater than limits prescribed by NEQS.

Nevertheless, as a result of different environmental collaborations between private and public sector organisations and supranational institutes, many leatherworking firms, particularly the export-oriented enterprises, have started to reconsider their production processes for reducing their negative environmental and social impacts, providing an opportunity to investigate the environmental drivers, enablers and barriers in this largely unexplored developing economy context having distinct institutional settings.

## **1.6 Structure of the thesis**

This thesis is structured in seven chapters.

Chapter 1 has introduced the study, explaining its context and relevance while also outlining its research question and objectives. It has explained the scope of this study and has also presented the institutional environment in which leatherworking firms in Pakistan

have been operating. It thus substantiates the choice of examining the environmental drivers, enablers and barriers in SMEs in this developing economy.

Chapter 2 critically reviews the extant literature on environmental sustainability in SMEs. It examines the three streams of literature including the environmental drivers, barriers and enablers in SMEs. Consequently, it identifies the research gaps in the extant literature, contextualises the research problem and outlines the research agenda for this study. Accordingly, the chapter then reviews theoretical frameworks including institutional theory, resource-based view of the firm, natural-resource-based view and dynamic capabilities perspective, which are considered appropriate for undertaking this research.

Thereafter Chapter 3 addresses the methodological considerations of this study. It rationalises the choice of adopting the qualitative approach and multiple case study design for this study while also detailing the methods of data collection and analysis. In the process, it also presents ethical considerations of the study.

Chapter 4 reports on findings about the environmental practices of sample firms. Based on an analysis of the nature and scale of environmental actions of SMEs, this chapter classifies them into three categories: (a) environmentally progressive, (b) environmentally moderate and (c) environmentally distanced SMEs. Compared to environmentally distanced SMEs, which are not environmentally responsible and therefore do not take environmental measures to proactively reduce their environmental footprints, environmentally progressive and moderate firms display a higher level of environmental stewardship and proactively take environmental initiatives. The discussion and analysis in the remainder of this thesis are informed by this classification of SMEs.

The following three chapters examine environmental drivers, enablers and barriers in environmentally progressive and moderate SMEs. The reason for not focusing on environmentally distanced SMEs in the following chapters is that these firms are not environmentally driven and do not advance the resources and capabilities needed for environmental improvement. However, multilevel (micro-meso-macro) factors that underpin the environmentally irresponsible behaviour of firms in this category are discussed at length in Chapter 4 (Section 4.2.3).

Chapter 5 looks into the multilevel (micro-meso-macro) factors driving environmental sustainability in environmentally progressive and moderate leatherworking SMEs. It also examines the interaction effect of these factors on the environmental engagement of these firms.

Chapter 6 examines the dynamic capabilities for environmental improvement that serve as enablers of environmental improvement for environmentally progressive and moderate SMEs. In the process, it also investigates the microfoundations that underpin these environmental capabilities.

Chapter 7 investigates the barriers that limit environmental improvement in environmentally progressive and moderate SMEs.

Chapter 8 concludes this study. It discusses the main findings and highlights contributions to knowledge. It also acknowledges the limitations of this research, suggests possible future research areas and offers some policy recommendations.

Finally, at the end, a list of references and compilation of appendices are presented respectively.

## Chapter 2 Literature review

### 2.1 Introduction

This chapter critically reviews extant literature on environmental drivers, barriers and enablers in the context of SMEs. In the process, it identifies gaps in the literature which in turn inform the research agenda and selection of suitable theoretical lens for this study. For keeping the literature review to a manageable length, the chapter discusses key studies in detail while referring to the wider body of greening literature on SMEs as considered appropriate.

For the literature search, different databases were used with some key words assisting in the process (Table 2.1). Table 2.1 enlists the main sources of literature.

**Table 2.1: Sources of literature search**

Major search databases used	Major journals used	Some key words used while searching literature
Science Direct EBSCO Emerald ProQuest JSTOR Wiley online library SAGE Journals Google Scholar	Business Strategy and the Environment Journal of Business Ethics Journal of Cleaner Production Business Ethics: A European Review Corporate Social Responsibility and Environmental Management Business & Society British Journal of Management Academy of Management Review Journal of Management Strategic Management Journal Strategic Organisation	SMEs, environmental practices, environmental improvement, responsible practices, environmental engagement, environmental motivations/drivers, environmental barriers/constraints, environmental enablers, environmental entrepreneurship, ecopreneurship, sustainable business practices, human capital, social capital, inter-firm collaboration, green supply chains, resources, capabilities, dynamic capabilities, resource based view, green dynamic capabilities, green resources, natural resource based view and Pakistan's leather industry.

Source: Developed by the researcher for this study.

The selection of journals was made on the basis that they had been publishing the key empirical and theoretical literature that inform this study. In addition to journal articles, other literature sources such as industry sector reports and books were also reviewed. The literature review started with the broader literature on the environmental engagement of firms, in the process focusing specifically on SMEs. This led the researcher to search for literature particularly on environmental drivers/motivations, barriers and enablers in SMEs. The critical review of these streams of the literature revealed that while environmental drivers and barriers were examined to quite some extent in the literature, enabling factors of environmental improvement in SMEs were under-researched (Sections 2.3 and 2.4). Moreover, prior studies had largely investigated the environmental behaviour of SMEs in developed economies. Accordingly, the research agenda for this study was outlined i.e. to examine the dynamics of environmental behaviour of leatherworking SMEs in Pakistan (Section 2.5). Given the institutional environment in Pakistan, where formal institutions were less effective, and some (informal) compensatory institutional structures had been addressing the institutional 'gaps' (Kolk, 2014) by driving and enabling SMEs to adopt environmental practices (Section 1.5.3) effectively, it was ascertained that a hybrid theoretical framework would better help understand the internal dynamics of environmental engagement of SMEs while also examining the influence of external institutional actors on their environmental improvement. Accordingly, the literature on institutional theory, resource-based view (RBV), natural-resource-based view (NRBV) and dynamic capabilities framework (DCs) was reviewed.

The remainder of this chapter is structured in six sections. Section 2.2 presents a synthesis of literature on environmental practices and strategies of SMEs. The literature on environmental drivers is critically reviewed in Section 2.3. In Section 2.4, environmental

barriers constraining environmental improvement in SMEs are reviewed (Section 2.4.1), together with the literature on resources and capabilities which enable these firms to become environmentally responsible businesses (Section 2.4.2). Informed by these streams of literature, Section 2.5 summarises gaps in the extant literature and contextualises the research problem while outlining the research agenda for this study. Consequently, this chapter reviews the suitable theoretical frameworks for the study in Section 2.6. Finally, the chapter concludes with a summary in Section 2.7.

## **2.2 Environmental practices and strategies of SMEs**

According to Hart (1995, p. 992), firms can reduce their environmental footprints through two primary means; '(a) *control*: emissions and effluents are trapped, stored, treated, and disposed of using pollution-control equipment or (b) *prevention*: emissions and effluents are reduced, changed, or prevented through better housekeeping, material substitution, recycling, or process innovation'. In the same vein, some other studies (Bönte and Dienes, 2013; Frondel et al., 2007) discuss that firms can address environmental issues by adopting end-of-pipe and cleaner production technologies. While end-of-pipe technologies 'aim at diminishing harmful substances that occur as by-products of production', adoption of cleaner technologies 'generally lead to both reductions of by-products and energy and resource inputs' (Frondel et al., 2007, p. 3). In fact, cleaner technology adoption is an example of what underpins the philosophy of cleaner production. According to van Berkel (2007, p. 686), cleaner production 'aims to achieve a different organisational mindset to environmental management and resource use, and thereby establish a continuous environmental improvement process, or ensure integration of environmental and resource considerations in already existing continuous improvement processes in the organisation'.

Compared to end-of-pipe technologies, such as effluent treatment plants, which require an intensive investment of resources, SMEs regard the adoption of cleaner production techniques, such as reducing the input intensity of processes by adopting better measurement practices, a less resource intensive option (Ortolano et al., 2014). Perhaps, it is the main reason why these firms are generally observed to have been adopting cleaner production practices rather than investing in end-of-pipe technologies (e.g. Hamann et al., 2015; Ortolano et al., 2014; Brammer et al., 2012; Hsu and Cheng, 2012; Cassells and Lewis, 2011; Revell et al., 2010; Blackman and Kildegaard, 2010; Howgrave-Graham and van Berkel, 2007; van Berkel, 2007; Naffziger et al., 2003; Vernon et al., 2003; Rathi, 2003).

For instance, in a recent study Ortolano et al. (2014) find that for reducing their pollution load SMEs in Pakistan's leather industry rely more on cleaner production techniques compared to the end-of-pipe treatment of effluents because of having limited resources to install and operate a wastewater treatment plant. Environmental measures that they take broadly concern the reduction in input intensity of their processes, such as minimising the use of water, energy and materials. In another study, Blackman and Kildegaard (2010) discuss that leatherworking SMEs in Mexico prefer to adopt simpler and less expensive technologies to adopt cleaner processes, such as precipitation and recycling for reusing chrome, instead of having an expensive end-of-pipe treatment facility.

Beyond the leather industry, as other studies from emerging and developed countries show, SMEs in a number of other industry sectors have also been found inclined towards cleaner production practices. For instance, in a recent study Hamann et al. (2015) find that in the South African wine industry SMEs take cleaner production measures by reducing their energy and water usage. Brammer et al. (2012) in their study on the UK SMEs in



metals, engineering, chemicals, printing, paper and timber sectors discuss that many firms in these industry sectors try to reduce their negative impact on the natural environment, for instance, by recycling wastes and using sustainable energy sources. Moreover, Vernon et al. (2003) find that smaller businesses operating in the tourism sector in the UK try to reduce their environmental footprints through controlling the production of waste and adopting water conservation measures.

However, research shows that some relatively established, resource rich and operationally more active SMEs do invest in end-of-pipe technologies alongside adopting less resource intensive pollution prevention strategies (e.g. Wahga et al., 2015). Research also shows that in some countries SMEs have collaborated with national and supranational organisations and by raising needed resources through such networks they have been successful in managing expensive effluent treatment facilities at the cluster level. Examples can include combined effluent treatment plants for tannery clusters in India (Gombault and Begeer, 2013), Italy (Battaglia et al., 2010; De Gisi et al., 2009) and Pakistan (Lund-Thomsen, 2009).

Different environmental strategies, such as proactive, reactive and resistant approaches (e.g. Aragón-Correa et al., 2008; Worthington and Patton, 2005; Tilley, 1999b), can inform SMEs' choice to uptake environmental protection measures. Proactive environmental strategy refers to the adoption of environmental protection measures in such a way that firms go beyond compliance and by innovating their products, processes and business models combat environmental problems (Menguc et al., 2010; Aragón-Correa et al., 2008; del Brío and Junquera, 2003; Aragon-Correa and Sharma, 2003; Russo and Fouts, 1997). For example, 'advantage-driven' SMEs (Parker et al., 2009) exploiting environmental business

opportunities while also achieving eco-efficiency. Reactive environment strategy is related to firms' actions aimed at reducing environmental footprints on ad hoc bases (del Brío and Junquera, 2003; Aragon-Correa and Sharma, 2003; Tilley, 1999b), such as 'compliance-driven' SMEs (Parker et al., 2009) doing a bare minimum to comply with regulations in order to avoid penalties. Finally, resistant environmental strategy refers to firms' omitted environmental behaviour i.e. they show no consideration for environmental protection in their decisions and operations (Tilley, 1999b). For instance, 'profit-driven' SMEs (Parker et al., 2009) which focus on saving money at every opportunity.

Whether SMEs adopt a proactive environmental strategy, take a reactive approach to addressing environmental problems or distance themselves from environmental practices by adopting a resistant environmental strategy, their environmental behaviour would be driven by certain factors, such as legal, economic, environmental, social and ethical. The next section of this chapter, therefore, presents a critical review of the literature stream examining environmental drivers in SMEs.

### **2.3 Drivers of environmental improvement in SMEs**

Research shows that different factors can influence the environmental behaviour of SMEs<sup>4</sup>. Most often discussed are: compliance with environmental regulations (e.g. Wilson et al., 2012; Revell et al., 2010), economic and competitiveness rationale (e.g. Brammer et al., 2012; Parry, 2012; Studer et al., 2006) and ethical values of SME owner-managers (e.g. Hamann et al., 2015; Williams and Schaefer, 2013). At the same time, the literature also

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<sup>4</sup> While some previous studies regard these factors as motivations for environmental improvement, the others consider them as environmental drivers. In this study, these two terms (environmental motivations and drivers) have therefore been used interchangeably.

reports some evidence about the supportive role of intermediary organisations driving environmentally sustainable business practices in SMEs (e.g. Ortolano et al., 2014; Klewitz et al., 2012). While there is some evidence suggesting that these environmental drivers can inspire SMEs to behave environmentally responsibly (e.g. Hamann et al., 2015; Williams and Schaefer, 2013; Brammer et al., 2012; Revell et al., 2010), there are studies which counter argue that these drivers are less likely to advance environmental practices in these firms (e.g. Wilson et al., 2012; Dahlmann et al., 2008). As is discussed in the following four subsections (2.3.1, 2.3.2, 2.3.3 and 2.3.4) of this chapter, there are a number of reasons for the absence of consensus among researchers on the effectiveness of these environmental drivers.

### **2.3.1 Compliance with regulation**

Across the globe, national governments take a number of regulatory measures to support the emergence, survival and growth of SMEs. At the same time, some regulations are primarily developed for protecting the wider natural environment (Liu et al., 2004). Broadly, these environmental rules require businesses (including SMEs) to minimise their environmental footprints so that the natural environment is protected from environmentally harmful business practices. Across countries, legislation thus seems to govern not only the economic activities of SMEs but also their social and environmental actions. Consequently, in the literature, one of the most often discussed environmental drivers in SMEs appears to be compliance with regulation (Hamann et al., 2015; Wilson et al., 2012; Brammer et al., 2012; Moorthy et al., 2012; Revell et al., 2010; Masurel, 2007; Williamson et al., 2006; Studer et al., 2006; Revell and Rutherford, 2003; Patton and Worthington, 2003; Petts et al., 1999; Tilley, 1999a). However, still, there is disagreement

among researchers on the exact influence of regulatory measures to inspire SMEs to become environmentally responsible enterprises (Williamson et al., 2006).

Research shows that, generally, SMEs are found unhappy with and unwelcoming to environmental regulations (e.g. Wilson et al., 2012). Some researchers argue that significant reasons for SMEs being uncomfortable with legislation are complexities inherent in these rules and costs attached to their observance (Wilson et al., 2012; Simpson et al., 2004; Petts et al., 1999). Although regulations are described as complex and cost ineffective, some SMEs still comply with them. Such firms adopt a reactive approach to environmental improvement (Parker et al., 2009; Patton and Worthington, 2003; Tilley, 1999b). The purpose would often be to ensure survival rather than a contribution to 'social good' (Patton and Worthington, 2003). Parker et al. (2009) classify SMEs with environmentally reactive behaviour as 'compliance-driven' firms.

Another stream of literature that has identified different drivers of and barriers to environmental improvement in SMEs asserts that some SMEs do not regard legislation a leading driver of their environmentally responsible behaviour (e.g. Brammer et al., 2012; Lewis and Cassells, 2010; Menguc et al., 2010). Rather, they consider it a lower level motivation for environmental improvement. For instance, in a survey-based study, Brammer et al. (2012) report that strategic intent and not compliance is the main driver for SMEs in the UK to adopt environmental management practices. To some extent, Cordano et al. (2010) also report similar results when examining factors of effective implementation of environmental management programmes in the U.S. wine industry. The findings of their study reveal that, compared to compliance driven motivation, SMEs are mainly driven by an economic rationale to adopt environmental practices.

Other survey-based studies support arguments of Brammer et al. (2012) and Cordano et al. (2010). For instance, Pimenova and van der Vorst (2004) carried out an assessment of the effectiveness of environmental support programmes in the UK. Their findings indicate that among six major drivers of environmental actions, SMEs rank compliance as secondary level motivation. Similarly, while exploring motivations for environmental investment decisions among SMEs in the Dutch printing sector, Masurel (2007, p. 199) argues that regulations are the least effective driver of environmental investment decisions. According to this study, improvement in working conditions within the firm is the main motivation for SME owner-managers to invest in environmental activities.

Although these survey-based studies do identify that some SMEs do not regard compliance with regulations a leading motivation for environmental improvement, some caution is needed when interpreting these results. For example, most of these studies have received quite low response rate to their survey (e.g. Brammer et al., 2012; Pimenova and van der Vorst, 2004), which might limit the reliability of their findings. At the same time, these studies provide only some explanation for why SMEs rank compliance as lower level motivation for environmental improvement.

To an extent, some qualitative studies or those that have triangulated research strategies provide some reasons for SMEs to have rendered regulations a lower level of environmental motivation. For example, Hamann et al. (2015) have examined that in South Africa state regulation as a driver for environmental improvement in SMEs is absent. The main reason for this they have identified is the limited capacity of the government to enforce environmental legislation. Similarly, Wahga et al. (2015) who have investigated the environmental behaviour of leatherworking SMEs in Pakistan have also found that

legislation is not the leading force driving these firms to adopt environmental practices and the main reason for this is weaker enforcement of regulations. This is due to a number of factors including governmental agencies having a less developed interest in environmental issues, coupled with a lack of competency amongst local officials responsible for inspecting SMEs in this sector. Likewise, from China, Yu and Bell (2007) report that regulatory pressure is not a leading driver of environmental management practices among SMEs. Their findings are supported by evidence that because of weaker enforcement of regulations in China and limited communication between SMEs and government bodies, some entrepreneurs think that 'environmental legislation has nothing to do with their businesses' (Yu and Bell, 2007, p. 31).

Although some studies disregard compliance with regulations as a leading motivation for SMEs to adopt environmental practices, others have found evidence for a compliance driven tendency of environmentally responsible behaviour. For instance, Patton and Worthington (2003) assert that SMEs in the UK design their environment related actions mainly to comply with regulations. In a later study, Revell et al. (2010, p. 273) also argue that environmental behaviour of SMEs in the UK is largely driven by legislation suggesting that owner-managers of small businesses in this country are prepared to 'accept the costs of tougher environmental regulations and taxation'. The results of such studies appear encouraging for policy makers seeking to steer the environmental behaviour of small businesses through regulatory interventions (Revell et al., 2010; Tilley, 1999a). The argument of the compliance driven environmental behaviour of SMEs has found some support beyond the UK as well. In Hong Kong, for example, SMEs have been found to attend to environmental issues due to strict legislation (Studer et al., 2006). In their study, Studer

et al. (2006, p. 428) conclude that 'command-and-control mechanisms appear to be the most effective policy option for minimizing the environmental impacts of Hong Kong SMEs'.

Clearly, to date, there is disagreement among researchers on whether legislation is a chief means of inspiring SMEs to adopt environmental management practices. However, it is argued that unless the inherent complexities in regulations are reduced, they are made less cost intensive (Wilson et al., 2012; Williamson et al., 2006) and their threat is transformed into an opportunity (Studer et al., 2006), compliance would remain the least appealing driver of environmental improvement in SMEs.

### **2.3.2 Economic gains and competitiveness**

Does becoming green pay? Many studies in the greening literature have undertaken investigations for seeking an answer to this question (e.g. Brammer et al., 2012; Parry, 2012; Revell and Blackburn, 2007; Rao and Holt, 2005; Simpson et al., 2004). However, like on the topic of the effectiveness of compliance driven environmental behaviour, research has not yet established a definitive answer to the question whether the adoption of environmental practices leads to better financial gains and improved competitiveness. Thus, an uncertainty prevails amongst SMEs regarding the financial benefits from environmental improvement (Parker et al., 2009; Revell and Rutherford, 2003).

Research shows that some SMEs are happy to invest in environmental initiatives because they perceive growth and profit in such measures (Hamann et al., 2015; Lee, 2009; Collins et al., 2007; Thorpe and Prakash-Mani, 2003; Walley and Taylor, 2002). SMEs that have faith in economic and competitiveness gains from environmental improvement are found to be generally innovative, opportunistic and proactive in environmental management

(Hamann et al., 2015; Parker et al., 2009). Such firms do have or make efforts to obtain the required resources and capabilities to exploit the environmentally relevant market opportunities and for becoming competitive (Hamann et al., 2015; Roy and Thérin, 2008; Collins et al., 2007; Simpson et al., 2004). Parker et al. (2009) regard this type of SMEs as 'advantage-driven' firms because they take environmental protection measures to gain economic benefits.

In support of the view that environmental improvement can benefit SMEs financially, Brammer et al. (2012) find that some SMEs in the UK perceive economic benefits in environmental engagement. However, this financially led motivation to adopt environmental practices is found to be based on a notion that payoffs would come in the long run. To some extent, Lewis and Cassells (2010) present similar findings from New Zealand. Their survey-based study of 1000 SMEs from Auckland finds that most often manufacturing SMEs are driven by 'cost reduction / financial benefits' while adopting environmental practices. In another survey-based study of small firms in the scrap steel industry in the United States, Clemens (2006) confirms the presence of positive economic incentives and better financial performance emanating from environmentally responsible business practices.

Economic benefits from environmental improvement can come in different forms. Research shows that for SMEs these can come through reduced costs, increased revenues and enhanced reputation (Hamann et al., 2015; van Berkel, 2007; Thorpe and Prakash-Mani, 2003). At the same time, economic payoffs related with environmental improvement are also found to extend competitiveness gains to these firms (Hamann et al., 2015; Parry, 2012; Castka et al., 2004; Simpson et al., 2004). For example, Simpson et al. (2004) have



investigated the possibility of competitive advantage for the UK SMEs in adopting environmental practices. Findings of this study reveal that, compared to service providers, manufacturers are better able to gain competitive advantage through 'improved energy efficiency, reduced waste, increased recycling, increased quality, better environmental credentials, greater customer satisfaction, new business opportunities, gaining local community support, gaining increased staff commitment, positive pressure group relations, improved media coverage or a combination of these benefits' (Simpson et al., 2004, p. 168). In another study, which traces the evolution of environmental practices in SMEs in Cumbria (a region in the North of England), Parry (2012, p. 232) finds that 'micro-businesses can improve their competitiveness through being green'. By comparing the environmental behaviour of six micro businesses, this study reports that from the start these micro-businesses were motivated to gain financial benefits from environmental practices, and the benefits were expected to come through energy-saving and cost-saving measures.

To some extent, the argument of becoming competitive through environmental improvement has found support from some Asian regions as well. For instance, Studer et al. (2006, p. 427) argue that 'competitiveness and enhanced reputation appear to be the most important drivers' of environmental improvement in SMEs in Hong Kong. In another study, while identifying key determinants of sustainable business practices in Chinese SMEs, Yu and Bell (2007) conclude that a strategic objective of improving the public image of firm appears to be the most important motivation to adopt environmentally friendly practices. Thus, from the perspective of the business case for sustainability, reputation that is ultimately expected to add to competitiveness of the firm is considered to be driving SMEs for reducing their environmental footprints.

In fact, developing better reputation equates with building symbolic capital that is about how one is valued by others, such as the honour and prestige that a person or firm possesses (Stringfellow and Shaw, 2009; Shaw et al., 2008; Fuller and Tian, 2006). According to Bourdieu (1993, p. 37), symbolic capital builds on 'being known and recognized and is more or less synonymous with: standing, good name, honour, fame, prestige and reputation.' Since symbolic capital can be converted into economic capital through entrepreneurial initiatives (Gergs, 2003), environmentally proactive SMEs are likely to build their reputation as environmentally responsible businesses by adopting eco-friendly practices allowing them to attract more customers and augment their sales (Fuller and Tian, 2006). By developing symbolic capital, they can satisfy their stakeholders, such as the regulatory bodies, industry associations and NGOs, and this can enable SMEs to seek legitimacy of their behaviour and existence (Fuller and Tian, 2006; Gergs, 2003; DiMaggio and Powell, 1983).

Contrary to the argument that environmental improvement can bring economic and competitiveness benefits to SMEs, some researchers have found that the adoption of environmental practices is a burden and therefore a drain on profits for firms (Revell and Blackburn, 2007; Simpson et al., 2004). Dahlmann et al. (2008), for example, have found that some SMEs in the UK are not motivated by the economic arguments of sustainability, and they do not perceive 'competitive opportunities' in environmental improvement. For these reasons, many SMEs are thought not to be willing to make environmental investments. In another study, Revell and Blackburn (2007) have examined the environmental practices of SMEs in the construction and restaurant industries in the UK. Findings of their qualitative research have revealed that firms in these sectors do not appear to be happy to adopt eco-friendly business practices because they do not regard

such measures as cost effective. The main reasons for the lack of faith in economic gains from sustainable practices are identified to include: extensive financial costs, extra time and additional efforts needed to adopt environmental practices (Revell and Blackburn, 2007). The evidence provided by these researchers (Revell and Blackburn, 2007) also shows that SMEs find it difficult to pass on the costs of environmental measures to their customers, which ultimately reduces their profitability. By and large, the literature on economic and competitiveness gains from environmental improvement in SMEs suggests that it is difficult to establish with certainty that becoming green always pays. Thus, the argument of the business case for sustainability does not appear to apply generally.

### **2.3.3 Ethical values of SME owner-managers**

The smaller businesses are often established around the personal aspirations and philosophies of owner-managers (e.g. Williams and Schaefer, 2013; Spence, 1999). It is therefore likely that the personal values, vision and mission of entrepreneurs might get transmitted into the culture and values of their enterprises (Hamann et al., 2015; Holt, 2012; Hemingway, 2005; Hemingway and Maclagan, 2004). As a result, it becomes hard to isolate values of SMEs from the values and beliefs of their owner-managers (Williams and Schaefer, 2013; Battisti and Perry, 2011). It implies that if owner-managers are considerate towards environmental degradation and are personally inclined to protect the wider natural environment, then it can be expected that they would introduce environmentally friendly practices in their businesses (Cambra-Fierro et al., 2008; Hemingway and Maclagan, 2004). Thus, for some SMEs, environmental values of owner-managers are likely to dictate responsible business practices of the whole firm (Hamann et al., 2015; Hsu and Cheng, 2012; Hammann et al., 2009). Relative to the literature on compliance and business

case motivations, research into value driven environmental engagement of SMEs remains limited. However, some studies exist. Williams and Schaefer (2013), for instance, have explored the role of managers' values in the environmental engagement of SMEs in the UK. Findings from this qualitative study reveal that personal values of owner-managers do play a major role in engaging SMEs with climate change issues. These authors conclude that instead of campaigning for the business case for sustainability, advisory services should concentrate more on promoting value-driven environmental engagement across SMEs.

The role of values in driving SMEs to adopt environmental practices has found some support beyond the UK as well. For example, Battisti and Perry (2011) argue that, while cost saving and competitiveness are important environmental drivers, some SMEs in New Zealand are largely driven by the ethical values of owner-managers to adopt environmentally responsible practices. Similarly, Cambra-Fierro et al. (2008) find that some Spanish SME owner-managers not only try to satisfy their customers, staff and shareholders but, driven by their ethical values, also consider satisfying communities by adopting environmentally responsible business practices. To some extent, similar findings are reported in another study that looks into environmental management programmes in SMEs in the wine industry in the United States (Cordano et al., 2010). This survey-based study reveals that attitudes and norms of SME owner-managers are significantly associated with environmental engagement of their firms. Likewise, while investigating CSR practices in SMEs in Taiwan, Hsu and Cheng (2012, p. 302) have found that 'personal values, ethics, or support of the top manager are the key drivers of CSR practices in SMEs'.

Contrary to above studies, that consider owners' and managers' values, beliefs and attitudes a driver of environmental improvement in SMEs, some researchers assert that

personal environmental attitudes of owners might not serve as an effective predictor of the environmental behaviour of SMEs. For example, through a survey based study of small firms operating in the pharmacy sector in Western Australia, Schaper (2002) finds that entrepreneurs' personal environmental behaviour does not predict the environmental performance of pharmacies. This study concludes that without providing quick and convenient access to environmental information, it is hard to improve the environmental behaviour of smaller firms. Therefore, reliance only on the environmental values of owner-managers might not help promote responsible business practices in these firms.

#### **2.3.4 Intermediary organisations driving SMEs for environmental improvement**

Finally, the literature also suggests that to an extent intermediary organisations (e.g. industry associations, environment support institutes, NGOs and international donors) can exert normative pressures (DiMaggio and Powell, 1983) on firms and drive them to display environmentally responsible behaviour (Berrone et al., 2007; Delmas and Toffel, 2004; Hoffman, 1999). Particularly, in the case of SMEs which are generally considered to be deterred by resource scarcity and capability deficiency to take sustainability-oriented initiatives (Parker et al., 2009; del Brío and Junquera, 2003), the role of environment support institutions in motivating and enabling these firms to take innovative measures for reducing their environmental footprints has been found to be influential (Ortolano et al., 2014; Klewitz and Hansen, 2014; Weltzien Høivik and Shankar, 2011; York and Venkataraman, 2010). While operating as a meso level driver, the intermediary entities have been successful in achieving their environmental targets through different interventions such as the educational and training programmes, and collaborative asset development (Ortolano et al., 2014; Battaglia et al., 2010). Often such interventions have

been cluster-based, aimed at achieving larger ecological benefits from the environmental engagement of a larger community of smaller firms (Martínez-del-Río and Céspedes-Lorente, 2014; Ortolano et al., 2014; Battaglia et al., 2010). However, a need has been identified to improve the governance of such cluster based environmental interventions for ensuring their sustained effectiveness in driving smaller businesses for environmental improvement (de Oliveira and Jabbour, 2015).

### **Section summary**

Table 2.2 presents a summary of the development status of each stream of literature on environmental drivers in SMEs while also identifying the research gaps. Taken together, the literature on drivers of environmental improvement in SMEs provides some valuable but contrasting insights about their influence on the environmental behaviour of these firms. While some studies regard compliance as one of the leading drivers of environmental improvement in SMEs, others do not consider it an important motivation for these firms to behave environmentally responsibly. Similarly, the business case for sustainability does not seem to apply generally. Some SMEs see commercial benefits in eco-friendly business practices whereas others still regard adopting such practices a drain on their profits. The same holds true for the value-driven argument, where some owner-managers are able to transmit their personal environmental concerns into their business objectives, and others lag behind.

**Table 2.2: Summary of the literature on environmental drivers in SMEs**

Literature stream(s)	Representative studies (year)	Development status and research gaps
<b>Compliance with environmental regulations</b>	Hamann et al. (2015); Wilson et al. (2012); Brammer et al. (2012); Revell et al. (2010); Moorthy et al. (2012); Lewis and Cassells (2010); Menguc et al. (2010); Cordano et al. (2010); Parker et al. (2009); Mir (2008); Bradford and Fraser (2008); Revell and Blackburn (2007); Masurel (2007); Williamson et al. (2006); Studer et al. (2006); Simpson et al. (2004); Patton and Worthington (2003); Revell and Rutherford (2003); Petts et al. (1999)	<ul style="list-style-type: none"> <li>While some studies regard compliance a leading motivation for environmental improvement in SMEs, the majority disregard this notion.</li> <li>In terms of number, reasonable corpus of studies are available.</li> <li>Studies have largely investigated developed economy contexts.</li> <li>Developing economy perspective remains under-examined.</li> <li>There is also a need to examine how this environmental driver interacts with other drivers and influence environmental engagement of SMEs.</li> </ul>
<b>Economic gains and competitiveness benefits</b>	Hamann et al. (2015); Brammer et al. (2012); Parry (2012); Lewis and Cassells (2010); Parker et al. (2009); Dahlmann et al. (2008); Roy and Thérin (2008); Revell and Blackburn (2007); Yu and Bell (2007); Collins et al. (2007); Masurel (2007); Clemens (2006); Studer et al. (2006); Rao and Holt (2005); Castka et al. (2004); Fresner and Engelhardt (2004); Naffziger et al. (2003); Thorpe and Prakash-Mani (2003); Revell and Blackburn (2007); Simpson et al. (2004); Walley and Taylor (2002)	<ul style="list-style-type: none"> <li>Generally, SMEs are seen to have been attracted by the economic and competitiveness benefits of environmental practices. Yet, some still do not see a business case in sustainability measures.</li> <li>In terms of number, reasonable corpus of studies are available.</li> <li>Most of the studies are from the developed economy context.</li> <li>Developing economy perspective remains under-examined.</li> <li>There is also a need to examine how this environmental driver interacts with other drivers and influence environmental engagement of SMEs.</li> </ul>
<b>Ethical values of SME owner-managers</b>	Hamann et al. (2015); Williams and Schaefer (2013); Holt (2012); Battisti and Perry (2011); Collins et al. (2010); Revell et al. (2010); Cordano et al. (2010); Hammann et al. (2009)	<ul style="list-style-type: none"> <li>Generally, the literature appears to be agreeing on the positive influence of sustainability-values of SME owner-managers on the environmental engagement of these firms. Yet, a few studies disregard this notion.</li> <li>In terms of number, compared to the compliance and business case for sustainability literature streams, this research stream remains under-researched.</li> <li>Often, studies have focused on the developed economies.</li> <li>Developing economy perspective remains under-examined.</li> <li>There is also a need to examine how this environmental driver interacts with other drivers and influence environmental engagement of SMEs.</li> </ul>
<b>Intermediary organisations driving SMEs for environmental improvement</b>	de Oliveira and Jabbour (2015); Ortolano et al. (2014); Klewitz and Hansen (2014); Martínez-del-Río and Céspedes-Lorente (2014); Weltzien Høivik and Shankar (2011); York and Venkataraman (2010); Battaglia et al. (2010)	<ul style="list-style-type: none"> <li>Generally, the literature appears to be agreeing on the positive role of intermediary organisations in driving SMEs to adopt environmental practices.</li> <li>In terms of the number of studies, compared to other streams, this stream of literature does not appear to be rich.</li> <li>Both developed and developing economy perspectives have been investigated. Yet, there is scope to examine the developing economy contexts because they remain relatively under-researched.</li> <li>There is also a need for research to examine how intermediary organisations may interact with other environmental drivers and drive SMEs for environmental improvement.</li> </ul>

Source: Developed by the researcher for this study

Similarly, in some instances, cluster-based environmental interventions from various intermediary organisations have been seen as an effective driver of environmental improvement in SMEs. However, the need for better governance of such interventions has been identified to make them more effective.

It appears that absence of a definite answer and therefore consensus among researchers on the role of different drivers in inspiring SMEs to behave environmentally responsibly might persist indefinitely. The reason is that SMEs operate in different contexts. Therefore, heterogeneity across industry sectors and divergence of scenarios in terms of socio-economic and political conditions of economies can make it harder to achieve a universal answer to the effectiveness of environmental drivers in persuading SMEs to become responsible enterprises. Prior research on environmental drivers has focused attention on some of the more significant micro (e.g. environmental values of owner-managers), meso (e.g. the role of intermediary organisations) and macro (e.g. regulations) level factors that induce SMEs to adopt sustainable practices. However, as Hamann et al. (2015) have also argued, generally it has considered these environmental drivers either in isolation or as independent from each other (e.g. Williams and Schaefer, 2013; Wilson et al., 2012; Williamson et al., 2006; Hillary, 2004). Thus, there is increasing recognition of the need to trace the interactive effect of these multilevel (micro-meso-macro) factors on environmentally sustainable entrepreneurial activity in SMEs (Hamann et al., 2015; Muñoz and Dimov, 2015; Foxon, 2011; Menguc et al., 2010).

Drawing on institutional theory, researchers have applied the concept of isomorphic pressures (DiMaggio and Powell, 1983), in an effort to explain how environmentally responsible business activity can be promoted (Bansal, 2005; Delmas and Toffel, 2004;



Rivera, 2004; Bansal and Roth, 2000). However, these pressures remain under-explored in SMEs in the context of developing economies, such as Pakistan. Furthermore, insufficient attention has been paid to their distinctive institutional arrangements and their interactions with firm-level factors. In order to address the need for research as identified, the reviewed literature provides a starting-point for this study, while a multilevel conceptual framework, informed by isomorphic institutionalism (DiMaggio and Powell, 1983) (for details, see Section 2.6.1), would allow accommodating the interactive effect of discrete drivers identified in the fieldwork in a more holistic way (Hamann et al., 2015; Muñoz and Dimov, 2015).

## **2.4 Resources, capabilities and environmental practices in SMEs**

The literature on environmental drivers in SMEs makes an important contribution in terms of providing an understanding about why some SMEs would adopt environmentally responsible business practices and why the others would remain environmentally distanced or less engaged. However, being informed by the perceptions of individuals (e.g. SME owner-managers) an understanding of environmental drivers or motivations can only provide a subjective assessment of the environmental behaviour of SMEs. Moreover, knowing about environmental drivers is not sufficient because in practice these would be the environmentally relevant resources and capabilities enabling or constraining SMEs to become environmentally responsible businesses. Indeed there is a clear distinction between resources and capabilities that is summarised in Table 2.3 (for details see Appendix-I).

**Table 2.3: Distinction between resources, capabilities and dynamic capabilities**

<b>Resources</b>	<b>Capability</b>	<b>Dynamic capabilities</b>
Resources are the assets that firms own and manage in tangible and/or intangible form. General resources are tradable in the market and can be easily transferred from one firm to another. It is hard to transfer or exchange firm-specific resources.	Capabilities represent the ability of firms to use and deploy owned resources. Capabilities are firm-specific because they are developed over time and are embedded in the processes and routines of firms. Capabilities can be hard to transfer among firms. Without resources, capabilities become useless.	Dynamic capabilities are a superior form of capabilities. Dynamic capabilities change/renew the resource base and substantive/ordinary capabilities of firms. Dynamic capabilities can operate effectively in the highly turbulent and moderately turbulent markets.

Source: Extracted from different literature sources.

As Table 2.3 shows, resources are the assets that firms own and manage in tangible and/or intangible form, such as physical, human and economic resources (Helfat and Peteraf, 2003; Barney, 1991), and capabilities represent the ability of firms to use and deploy owned resources to achieve particular end results (Helfat and Peteraf, 2003; Makadok, 2001). On the other hand, dynamic capabilities can enable firms to create, extend, modify or reconfigure their resource base and substantive/ordinary capabilities in order to effectively operate in and coevolve with moderately or highly dynamic business environment (Helfat and Peteraf, 2009; Ambrosini and Bowman, 2009; Newey and Zahra, 2009; Teece, 2007; Zahra et al., 2006; Eisenhardt and Martin, 2000; Lewin et al., 1999; Teece et al., 1997; McKelvey, 1997). Broadly, the concept of coevolution refers to organisational change processes in that firms change their resources and capabilities in accordance with the changes in their business ecosystem in order to adapt to it and therefore ensure their survival and competitiveness (Lewin et al., 1999; McKelvey, 1997).

The next two subsections of this chapter (2.4.1 and 2.4.2) present a review of the literature on barriers to and enablers of environmental improvement in SMEs, which are indeed underpinned by the resources and capabilities of these firms. Most of the studies in this stream of greening business literature view resources and capabilities from the perspective of barriers to environmental improvement in so far as a lack of resources and/or capabilities prevent SMEs from adopting environmental practices (e.g. Murillo-Luna et al., 2011; Dahlmann et al., 2008; Walker et al., 2008). Fewer studies have examined resources and capabilities as enablers of environmental improvement in these firms (e.g. Halme and Korpela, 2014; Hofmann et al., 2012; Aragón-Correa et al., 2008).

#### **2.4.1 Barriers to environmental improvement in SMEs**

Despite the presence of some evidence that environmental improvement can bring economic and competitive gains (Section 2.3.2), a number of studies have found that many SMEs lag behind in adopting eco-friendly business practices. Distancing from environmental practices or in some cases complete environmental disengagement can be largely attributed to limited resource and capability endowment of SMEs, which limits them from exploiting environmental opportunities (e.g. Vickers et al., 2009; Seidel et al., 2009). Prior literature, however, reports about both internal and external barriers to environmental improvement in SMEs.

**(a) Internal environmental barriers**

At the internal level, generally identified environmental barriers in SMEs include the lack of 'eco-literacy'<sup>5</sup> skills (Tilley, 2000) amongst the owner-managers and employees resulting in their limited interest in and skills to implement environmental innovations (Gherib and Berger-Douce, 2012; Murillo-Luna et al., 2011; Redmond and Walker, 2009), in addition to the scarcity of financial resources (Murillo-Luna et al., 2011; Parker et al., 2009; Dahlmann et al., 2008; Hillary, 2004; Pimenova and van der Vorst, 2004; del Brío and Junquera, 2003), lack of time to develop and deploy environmental strategies (Walker et al., 2008; Revell and Blackburn, 2007; Vernon et al., 2003; Pimenova and van der Vorst, 2004), and in some instances their inability to realise economic and competitiveness gains attached with environmental protection measures (Brammer et al., 2012; Rathi, 2003). Another equally significant reason for SMEs' environmental disengagement is that some owner-managers do not consider their firms to have a considerable impact on the environment (Massoud et al., 2010; Seidel et al., 2009; Vickers et al., 2009; Friedman and Miles, 2002; Tilley, 1999a).

**(b) External environmental barriers**

The research on sustainability in SMEs from around the globe shows that these firms are not only constrained by internal barriers but some external factors also limit them from adopting eco-friendly practices. A major external barrier is a complexity of environmental regulations, which SMEs are found not to be competent enough to comprehend (Wilson et al., 2012; Mir, 2008; Dahlmann et al., 2008; Simpson et al., 2004; Petts et al., 1999). In addition, environmental compliance often requires SMEs to take such measures that are

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<sup>5</sup> 'Eco-literacy' skills refer to the ability of individuals, such as owners, managers and labour force, to understand and implement/follow the principles of environmental protections (Tilley, 2000).

resource intensive, like buying advanced cleaner technologies, whereas these firms are generally found to be at a resource disadvantage (Parker et al., 2009; Hillary, 2004; del Brío and Junquera, 2003) not permitting them to cope with regulatory, environmental requirements.

Research also shows that in some countries although regulations are made, but these are not enforced effectively (Hamann et al., 2015; Ortolano et al., 2014; Massoud et al., 2010; Zhang et al., 2009; Dahlmann et al., 2008; Revell and Blackburn, 2007). Particularly, in developing countries firms think that it 'is cheaper to pollute and pay taxes rather than improving environmental performance' (Ciccozzi et al., 2003, p. 635). This gives an escaping route to those not willing to adopt eco-friendly practices. Consequently, even those SMEs that are willing to adopt environmental practices get deterred because they anticipate non-compliant peers out-competing them not only on the basis of prices but in terms of profitability as well (Revell and Blackburn, 2007). Moreover, some studies also report on SMEs' discontentment with a perceived lack of support from national government to enable them to become environmentally responsible businesses (Seidel et al., 2009; Dahlmann et al., 2008; Revell and Blackburn, 2007). It implies that in some countries institutional 'voids' (Silvestre, 2015; Parmigiani and Rivera-Santos, 2015; Khanna and Palepu, 1997) or 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) may hamper environmental improvement in SMEs. At this point, it is important to bear in mind that the literature distinguishes between institutional 'voids' and 'gaps' (e.g. Rivera-Santos et al., 2015; Littlewood and Holt, 2015b; Kolk, 2014; Rivera-Santos et al., 2012). While institutional 'voids' may refer to the absence of formal institutional set ups, institutional 'gaps' can denote a state of formal institutions being existent but not mature/established enough to effectively perform their functions (Littlewood and Holt, 2015b; Kolk, 2014;

Rivera-Santos et al., 2012). Informed by this distinction, it can be valuable to investigate if these are the institutional ‘voids’ or ‘gaps’, or may be both that might be limiting environmental improvement in SMEs in a specific country context.

Research has also identified that limited market opportunities can serve as a barrier for some SMEs to go green (Vickers et al., 2009; Dahlmann et al., 2008). At the same time, limited inter-firm collaboration and poor infrastructural support are also discussed as factors constraining these firms from environmental engagement (Allet, 2015; Revell et al., 2010; Vickers et al., 2009; Vernon et al., 2003). In some instances, lack of pressure from the community and consumers, in addition to the negligible environmental requirements from supply chain partners are also found to have been constraining SMEs from adopting responsible business practices (Shen et al., 2015; Massoud et al., 2010; Vickers et al., 2009; Zhang et al., 2009; Dahlmann et al., 2008; Studer et al., 2006).

### **Section summary**

In summary, the literature on environmental barriers suggests that there are multifaceted barriers that can limit SMEs from becoming environmentally responsible enterprises (Table 2.4). The most often seen internal environmental barriers include the limited financial resources, lack of environmental education and limited realisation of owner-managers regarding the impact of their firm on environmental degradation, in addition to insufficient time to invest in environmental improvement of their firm (Table 2.4).

**Table 2.4: Summary of literature on environmental barriers in SMEs**

Literature stream(s)	Representative studies (year)	Development status and research gaps
<p><b>Internal barriers</b></p> <p>For example, resource scarcity, a deficit of eco-literacy skills, owner-managers not realising the impact of their firm on the environment and insufficient time resources.</p>	<p>Gherib and Berger-Douce (2012); Murillo-Luna et al. (2011); Massoud et al. (2010); Redmond and Walker (2009); Parker et al. (2009); Seidel et al. (2009); Vickers et al. (2009); Dahlmann et al. (2008); Walker et al. (2008); Revell and Blackburn (2007); Hillary (2004); Pimenova and van der Vorst (2004); del Brío and Junquera (2003); Vernon et al. (2003); Tilley (1999a)</p>	<ul style="list-style-type: none"> <li>▪ A reasonable corpus of studies has investigated the internal environmental barriers in SMEs.</li> <li>▪ Both developed and developing economy contexts have been examined.</li> <li>▪ Yet, there is scope to investigate contextually situated internal barriers to environmental improvement in SMEs in many developing economies such as Pakistan which remain under-researched until to date.</li> </ul>
<p><b>External barriers</b></p> <p>For example, complexity and weaker implementation of environmental regulations, limited support from national governments, under-developed infrastructural facilities, limited green market opportunities and limited pressure from local communities and consumers.</p>	<p>Hamann et al. (2015); Allet (2015); Shen et al. (2015); Ortolano et al. (2014); Wilson et al. (2012); Revell et al. (2010); Massoud et al. (2010); Parker et al. (2009); Seidel et al. (2009); Vickers et al. (2009); Zhang et al. (2009); Mir (2008); Dahlmann et al. (2008); Revell and Blackburn (2007); Studer et al. (2006); Simpson et al. (2004); Ciccozzi et al. (2003); Vernon et al. (2003); Petts et al. (1999)</p>	<ul style="list-style-type: none"> <li>▪ In terms of number, a reasonable corpus of studies has examined the external environmental barriers faced by SMEs.</li> <li>▪ Extant research has investigated both developed and developing economy contexts.</li> <li>▪ Yet, there is merit in investigating some developing countries like Pakistan which have unique institutional structures, for example, due to the presence of (informal) compensatory institutional set ups taking measures to addressing the institutional ‘gaps’ caused by the less effective formal institutions.</li> </ul>

Source: Developed by the researcher for this study

The most commonly observed external environmental barriers relate to the complexity of environmental regulations and their weaker enforcement, limited support from national governments for the environmental capacity building of resource-deficient SMEs, under-developed infrastructures, limited market opportunities, limited pressure from local communities and consumers for addressing environmental issues (Table 2.4). Often, these pervasive environmental barriers are seen to have been putting SMEs at a disadvantaged position resulting in their adoption of a reactive environmental strategy (Aragón-Correa et al., 2008). While the literature on environmental barriers in SMEs has previously investigated both developed and developing economies (Table 2.4), there is still merit in examining this phenomenon in the context of developing economies where due to their local and regional peculiarities SMEs might be facing different internal barriers compared to their counterparts in developed countries. Moreover, developing economies because of their distinct institutional structures when compared to developed countries (Section 1.2) can also offer new insights about the external environmental barriers faced by SMEs in these economies. This research, therefore, aims to fill such voids in the extant literature by investigating the environmental barriers that leatherworking SMEs face in Pakistan, which is a developing economy and has unique institutional settings. The uniqueness of Pakistani context is primarily underpinned by the presence of (informal) compensatory institutional structures that take measures to address the institutional ‘gaps’ caused by the less effective formal institutional set ups (Section 1.5.3).

#### **2.4.2 Enablers of environmental improvement in SMEs**

With the emergence of environmentally competitive markets, many SMEs now go beyond compliance and proactively engage with environmental issues (Hamann et al., 2015;



Torugsa et al., 2013; Hofmann et al., 2012; Gadenne et al., 2009). It is because they perceive economic and competitiveness benefits in eco-friendly business practices (Hamann et al., 2015; Clemens, 2006; Castka et al., 2004; Perez-Sanchez et al., 2003). Such SMEs either have or somehow manage to access or develop the required resources and capabilities for reducing their environmental footprints (Klewitz and Hansen, 2014; Ortolano et al., 2014; Halme and Korpela, 2014; Parry, 2012). The literature, however, appears to be thin in this research area and is also subject to a number of limitations, for example, in terms of the methodological approaches adopted, constructs used for analysis, industry sectors investigated and country contexts examined. Nevertheless, some representative studies can be traced such as Halme and Korpela (2014); Torugsa et al. (2013); Hofmann et al. (2012); Parry (2012); Aragón-Correa et al. (2008) and Roy and Thérin (2008).

Some of these studies reveal that inter-organisational collaboration capability is one of the key capabilities that can enable SMEs to adopt environmental practices effectively (Halme and Korpela, 2014; Hofmann et al., 2012; Gold et al., 2010). Building on this capability, SMEs are found to have compensated for their internal resource scarcity while they benefit from externally available resources and reduce their environmental footprints, for example by gathering industry related knowledge from different stakeholders and innovating accordingly (Halme and Korpela, 2014; Parry, 2012). Blackman and Kildegaard (2010), for instance, have found that leatherworking SMEs in Mexico have been able to develop their environmental knowledge resources for adopting cleaner technologies through their collaboration with the industry association. In another study from the United States, Hofmann et al. (2012) report about SMEs collaborating with their suppliers to find innovative solutions to address environmental problems, for example, by adopting cleaner production processes and substituting environmentally hazardous materials. Expansion in

environmental resource base in SMEs thus requires trust-based coalitions building on which these firms can collaborate with 'relevant external groups to garner external resources for adopting technologies, processes, and systems' that would be needed for better environmental management (Aragón-Correa et al., 2008, p. 92).

Appreciating the importance of environmental collaborations for resource expansion (Wassmer et al., 2014), some researchers discuss that SMEs working in clusters can benefit from their networking ability and address environmental challenges (de Oliveira and Jabbour, 2015; Weltzien Høivik and Shankar, 2011; Battaglia et al., 2010; Blackman and Kildegaard, 2010). A network is a set of autonomous organisations that join together to achieve goals that none of them can fulfil on their own and where the total contributions from different actors exceed the sum of the contributions from individual actors (Chisholm, 1998). For example, the learning networks, such as the knowledge sharing collaborations between SMEs and intermediary entities (Klewitz and Hansen, 2014; Parry, 2012; Battaglia et al., 2010), which may provide SMEs access to those ecological knowledge resources situated externally that these firms would not be able to acquire through internal measures but with the help of support institutes. Shared responsibilities to pursue a collective agenda can allow firms operating in clusters to collectively raise resources even for firm level activities, increase collective awareness (knowledge/informational resources) about environmental and social challenges, motivate larger number of units to behave responsibly and also share cost burden and save time (Weltzien Høivik and Shankar, 2011).

An example of a cluster based collaborative network for addressing environmental problems is the common facility effluent treatment plant installed for leatherworking SMEs in Kasur city in Pakistan (Vogt and Hassan, 2011). Although the plant was installed under a

collaborative project between UNIDO, Government of Pakistan and leatherworking firms, currently SMEs pool resources for bearing its operational costs. This plant not only treats the contaminated water drained by more than 250 tanneries, its management team also educates entrepreneurs and employees about the hazardous effects of wastewater on the productivity of agricultural land and health of individuals, and therefore inspire them to reduce environmental footprints of their tanneries.

Successful inter-organisational collaborations can be made through an effective use of social capital (Halme and Korpela, 2014). Adler and Kwon (2002, p. 23) state that social capital 'is the goodwill available to individuals or groups. Its source lies in the structure and content of the actor's social relations. Its effects flow from the information, influence, and solidarity it makes available to the actor'. According to Bourdieu (1983, p.190), as Gergs (2003, p. 44) translates, social capital is the 'sum of present and potential resources accruing from the possession of a stable net of more or less institutionalized relationships of mutual knowing and respecting'. Such a network of relationships, Bourdieu (1983, p.192) asserts is the product of 'individual or collective investment strategies aiming consciously or unconsciously at the creation and keep up of social relations, promising a direct benefit sooner or later'. Defining social capital by its function, Coleman (1988, p. S98) states that it is 'not a single entity but a variety of different entities, with two elements in common: they all consist of some aspect of social structures, and they facilitate certain actions of actors-whether persons or corporate actors-within the structure'. Coleman hence regards social capital as a productive resource, which makes it possible to achieve certain ends that would not be achievable in its absence. According to Nahapiet and Ghoshal (1998, p. 243), social capital is 'the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social

unit. Social capital thus comprises both the network and the assets that may be mobilized through that network'. These authors (Nahapiet and Ghoshal, 1998) have presented a framework which refers to three dimensions of social capital: the structural dimension, cognitive dimension and relational dimension. Structural dimension relates to the overall pattern of connections between actors in the pursuit of resources and information needed to perform certain actions or achieve certain objectives. Cognitive dimension refers to those resources providing shared representations, interpretations and systems of meaning among parties. Relational dimension concerns the kind of personal relationships that develop over a period of time amongst different actors. Taken together, the perspectives of various social scientists on social capital highlight that it resides in networks, the relationships between and among people and institutional actors, and that it is a productive asset which facilitates and enables some forms of social actions. For instance, while investigating the CSR practices of Egyptian SMEs Ibrahim et al. (2012) have found that social capital enhances the ability of firms for better environmental engagement. Similarly, Halme and Korpela (2014) argue that, in addition to financial resources, social capital in the form of R&D cooperation is one of the key factors enabling some Nordic SMEs to come up with environmental innovations. In another study, using the narratives of business profiles (submitted for the Small Business Awards in the UK) of 144 SMEs, Fuller and Tian (2006) identify that well-established small firms develop social capital to inform their environmental strategy whereas newly born small businesses use social capital to build their businesses. Thus the concept of social capital can be a useful lens to examine how by using their networks, for example in the form of their collaborations with various stakeholders like intermediary organisations and customers, SMEs can advance their environmental management.

Some survey based studies add to the list of enablers of environmental improvement in SMEs. For example, Aragón-Correa et al. (2008) and Torugsa et al. (2013) have identified that the capabilities of shared vision, stakeholder management and strategic proactivity can enable SMEs to address their environmental issues effectively. According to these researchers shared vision is an organisational capability which exists when all organisational members have identical values and beliefs towards an organisation's objectives and mission. Stakeholder management capability is an ability of a firm to establish trust-based relationships with a variety of stakeholders. Strategic proactivity is explained as a firm's ability to initiate changes in its strategic policies rather than to react to events.

Aragón-Correa et al. (2008) analysed the environmental strategy and performance of small businesses in automotive garages in Southern Spain. Their findings revealed that three capabilities (shared vision, stakeholder management and strategic proactivity) positively affected the adoption of proactive environmental strategy in SMEs. They also found that pro-active eco-efficient practices had a positive impact on the financial performance of sampled firms. Although the survey response rate for this study was fairly high (about 51 percent), concerns might be attached to the reliability and validity of quantitative parameters used since data were based on the perceptions of respondents. It is thus hard to determine how truly the perceptions reflected real actions of sampled firms. In the other quantitative study, building on Aragón-Correa et al. (2008) and the related literature on RBV and organisational capabilities, Torugsa et al. (2013) analysed the economic and environmental performance of machinery and equipment manufacturing SMEs in Australia. Their findings showed that the environmental dimension of corporate social responsibility was positively associated with the shared vision

capability, stakeholder management and strategic proactivity. However, contrary to Aragón-Correa et al. (2008), the environmental engagement was not found to have a positive impact on the financial performance of SMEs in this research. Considered together, findings of these two studies reveal that certain capabilities can enable SMEs to adopt environmental practices but, may not necessarily result in better financial performance.

Although the findings presented by Aragón-Correa et al. (2008) and Torugsa et al. (2013) are valuable contributions to this under-researched stream of literature, both these studies draw on capabilities that appear to be the characteristics of large size firms and therefore may not truly represent the capabilities of SMEs. For example, dissemination of shared vision is possible among structured teams with a stable turnover of employees. In SMEs, the turnover rate of employees is generally high, especially for those SMEs that work with contractual and seasonal labour (who may not come back in the next season). It can be therefore hard to experience a shared vision in SMEs. In addition to that, despite adopting a proactive environmental strategy, it is very rare for SMEs to work with well-crafted strategic policies - which large size firms can do. SMEs are generally considered to have a short-term strategic vision, and that may not require a very well-orchestrated sequence of activities.

In addition to Aragón-Correa et al. (2008) and Torugsa et al. (2013), other researchers have investigated the role of dynamic capabilities (Helfat et al., 2007; Teece, 2007; Teece et al., 1997) as enablers of environmental improvement in SMEs. Hofmann et al. (2012), for instance, analysed the sustainable practices of manufacturing SMEs in five East Coast states in the United States. The statistical estimates of this survey-based research indicate that

environmental management in SMEs is positively influenced by their ability to adopt advanced technology and inter-firm collaborations. However, the effect of innovation capability is identified to be marginal on environmental improvement in sample firms.

Considered together, while the survey based studies as reviewed (e.g. Torugsa et al., 2013; Hofmann et al., 2012; Aragón-Correa et al., 2008) tell something about what type of capabilities and dynamic capabilities can serve as enablers of environmental improvement in SMEs, they do not provide much explanation about the microfoundations (Felin et al., 2015; Molina-Azorín, 2014; Barney and Felin, 2013; Teece, 2007) of the processes whereby SMEs accumulate, develop and absorb into their systems and practices different capabilities that ultimately enable them for environmental improvement.

Some insights about 'how' SMEs develop the environmentally relevant resources and capabilities can be traced in few other studies (Lee, 2009; Roy and Thérin, 2008; Wahga et al., 2015). While describing the role of human capital as an enabling factor of environmental engagement in leatherworking SMEs in Pakistan, Wahga et al. (2015) discuss that in order to advance environmental knowledge resources and skills, owner-managers adopt an informal approach to learning. The main sources of learning are described to include: training events organised by the local Chamber of Commerce and environmental interventionists, discussions with experienced peers, learning through observation of shop floor activities, dialogues with employees and self-studying through books and browsing the internet for accessing environmental information. The study also reports about SME workers being trained informally. Like Wahga et al. (2015), Roy and Thérin (2008) also discuss that some Canadian SMEs acquire environmental knowledge from external sources, such as the trade associations, suppliers and public agencies, to fulfil

their environmental commitments. However, Roy and Thérin (2008) do not provide an explanation about whether the acquired knowledge contributes to environmental improvement in SMEs or not. Contrary to Wahga et al. (2015) and Roy and Thérin (2008), Lee (2009) discusses that in some Korean manufacturing SMEs human resources are formally trained to support the adoption of environmental management practices. Lee (2009) also explains that some SMEs offer extra incentives to their employees for encouraging them to attend green management training.

### **Section summary**

Table 2.5 presents a summary of the literature on environmental capabilities in SMEs, while also highlighting the gaps in the extant literature. Compared to environmental drivers and barriers, the literature on environmental enablers in SMEs remains too thin. The most often examined environmental capabilities in SMEs include the technology adoption capability, innovation capability, inter-firm collaboration capability, shared vision capability, stakeholder management capability and capability of strategic proactivity (Table 2.5).



**Table 2.5: Enablers of environmental improvement in SMEs**

Literature stream(s)	Representative studies (year)	Development status and research gaps
<p><b>Environmental capabilities</b></p> <p>Technology adoption capability, innovation capability, inter-firm collaboration capability / environment-specific social capital, shared vision capability, stakeholder management capability and strategic proactivity</p>	<p>de Oliveira and Jabbour (2015); Wahga et al. (2015); Halme and Korpela (2014); Torugsa et al. (2013); Parry (2012); Hofmann et al. (2012); Ibrahim et al. (2012); Weltzien Høivik and Shankar (2011); Blackman and Kildegaard (2010); Lee (2009); Aragón-Correa et al. (2008); Roy and Thérin (2008); Fuller and Tian (2006)</p>	<ul style="list-style-type: none"> <li>▪ A nascent area of research requiring investigation of environment specific capabilities enabling SMEs to reduce their environmental footprints.</li> <li>▪ Both developed and developing economy contexts remain under-examined.</li> <li>▪ There is a scope to investigate countries with unique institutional settings, such as Pakistan, where due to the limited formal institutional support SMEs are seen to have been collaborating with peers and intermediary organisations to take micro and meso level measures to advance their environmental capabilities for reducing their pollution load.</li> </ul>

Source: Developed by the researcher for this study

However, most of the studies investigating these environmental capabilities have covered the more advanced economies. In addition, the extant literature on environmental enablers SMEs provides little explanation of the processes that how SMEs develop the resources and capabilities which ultimately enable them to reduce their environmental footprints. Consequent to the literature reviewed on environmental enablers (Section 2.4.2), clearly, there remains a need for research to investigate environmental capabilities of SMEs, and particularly the processes that underpin the prevalence of such enablers for environmental improvement. The next section thus establishes the ground for conducting such a study by contextualising the research problem and developing a research agenda for this study.

## **2.5 Contextualising the problem and developing research agenda for this study**

Summarised in Table 2.6 is the development status of each stream of relevant literature reviewed for this study. Taken together, the literature on environmental drivers appears to dominate the field. However, a need for research has been identified to investigate the interaction effects of discrete environmental drivers in SMEs (Hamann et al., 2015; Muñoz and Dimov, 2015).

The second main research stream is barriers to environmental improvement. This literature highlights the absence of resources and capabilities that constrain SMEs from becoming environmentally responsible businesses. There is a need to examine these environmental barriers specific to industry and country contexts so that both policy and practices can be informed in a better way. This can help advance environmentally sustainable practices in SMEs across countries and industry sectors.

**Table 2.6: Summary of the literature streams on environmental practices in SMEs**

Streams of literature	Representative authors (years)	Development status and research gaps
<b>Drivers of environmental improvement</b>	Hamann et al. (2015); Williams and Schaefer (2013); Brammer et al. (2012); Wilson et al. (2012); Hsu and Cheng (2012); Parry (2012); Battisti and Perry (2011); Revell et al. (2010); Lewis and Cassells (2010); Cordano et al. (2010); Massoud et al. (2010); Hammann et al. (2009); Dahlmann et al. (2008); Cambra-Fierro et al. (2008); Revell and Blackburn (2007); Masurel (2007); Studer et al. (2006); Williamson et al. (2006); Pimenova and van der Vorst (2004); Simpson et al. (2004); Castka et al. (2004); Thorpe and Prakash-Mani (2003); Schaper (2002)	<ul style="list-style-type: none"> <li>Reasonable development in terms of number of empirical studies.</li> <li>Studies largely focus on developed countries.</li> <li>Thin research in the context of developing economies.</li> <li>Methodologically, quantitative studies might be possible in developed countries, where information about environmentally responsible practices of SMEs can be available.</li> <li>Developing economy focused studies are needed, and these should adopt a qualitative approach due to the availability of limited or no information about environmental practices of SMEs.</li> </ul>
<b>Barriers to environmental improvement</b>	Allet (2015); Shen et al. (2015); Brammer et al. (2012); Murillo-Luna et al. (2011); Massoud et al. (2010); Vickers et al. (2009); Zhang et al. (2009); Seidel et al. (2009); Mir (2008); Dahlmann et al., (2008); Walker et al. (2008); Revell and Blackburn (2007); Collins et al. (2007); Simpson et al. (2004); Pimenova and van der Vorst (2004); del Brío and Junquera, (2003); Ciccozzi et al. (2003); Friedman and Miles (2002); Petts et al. (1999); Tilley (1999)	<ul style="list-style-type: none"> <li>Reasonable corpus of empirical studies.</li> <li>The majority of studies have examined developed countries.</li> <li>Limited research in the context of developing economies.</li> <li>Quantitative studies dominate the stream.</li> <li>Qualitative research needed to explore the constraints to environmental engagement in developing countries which have different institutional settings.</li> </ul>
<b>Enablers of environmental improvement</b>	de Oliveira and Jabbour (2015); Wahga et al. (2015); Halme and Korpela (2014); Torugsa et al. (2013); Parry (2012); Hofmann et al. (2012); Ibrahim et al. (2012); Weltzien Høivik and Shankar (2011); Blackman and Kildegaard (2010); Lee (2009); Aragón-Correa et al. (2008); Roy and Thérin (2008); Fuller and Tian (2006)	<ul style="list-style-type: none"> <li>Nascent area of research.</li> <li>Limited number of studies in terms of number, industry and country contexts.</li> <li>Substantial research needed to develop understanding about enablers of environmental improvement in SMEs globally.</li> </ul>

Source: Developed by the researcher for this study.

The third and relatively under-researched area is the enablers of environmental improvement in SMEs. This research stream mainly discusses the capabilities of environmental management and provides limited insights about how SMEs develop and leverage resources and capabilities needed for environmental improvement. Hofmann et al. (2012) and Aragón-Correa et al. (2008) also highlight the need for research to examine the resources and capabilities building on which SMEs can establish their environmental practices and sustain these.

In terms of the research approaches adopted, both quantitative and qualitative studies can be traced in the literature. Nevertheless, the nascence of this research area affirms the need for more qualitative and case based studies, as Roy and Thérin (2008) also recommend that for a better understanding of the complexities underlying environmental engagement of SMEs and to thoroughly examine the enabling factors of their environmental behaviour there is a need for case based studies.

Finally, from the perspective of country context, a larger corpus of studies focuses on developed economies like the UK, Australia and the USA. Fewer researchers have examined the environmental behaviour of SMEs in developing economies, such as Pakistan. Thus, in order to develop a global understanding of the environmental behaviour of SMEs, more research is needed in the context of developing economies. A number of researchers, for example, Hamann et al. (2015), de Oliveira and Jabbour (2015), Wattanapinyo and Mol (2013), Wilson et al. (2012), Spence and Painter-Morland (2010) and Parker et al. (2009), have also identified the need for such research.

In order to fill the identified gaps in the extant literature, this study seeks to answer the following research question.

*To what extent do multilevel factors exert isomorphic pressures on leatherworking SMEs in Pakistan to behave environmentally responsibly, and what enables these firms to reduce their environmental footprints in response?*

And its research objectives are:

1. To explore environmental practices that SMEs in Pakistan's leather industry have adopted.
2. To identify multilevel environmental drivers and investigate their interactive effect on the environmental behaviour of leatherworking SMEs.
3. To examine the resources and capabilities that enable leatherworking SMEs to reduce their pollution load.
4. To investigate the factors that limit environmental improvement in leatherworking SMEs.

## **2.6 Theoretical frameworks underpinning this study – a review**

For achieving its objectives, this study draws on a hybrid theoretical framework which is informed by institutional isomorphism (DiMaggio and Powell, 1983), resource-based view of the firm (RBV) (e.g. Barney, 1991), natural-resource-based view of the firm (NRBV) (Hart, 1995) and dynamic capabilities framework (DCs) (e.g. Teece, 2007; Helfat et al., 2007; Eisenhardt and Martin, 2000; Teece et al., 1997). The use of these theoretical frameworks to examine the environmental behaviour of SMEs is also recommended in the literature. For example, many studies have used institutional theory (Scott, 2001; DiMaggio and Powell, 1983) for investigating the environmental behaviour of firms in different countries (Section 2.6.1). Given that Pakistan's economy has its unique institutional settings (Section

1.5), this theory would be useful to examine the influence of different institutional actors on environmental behaviour of leatherworking SMEs. While concluding their discussion in a systematic review of the literature on sustainable practices in SMEs from 1987 until 2010, Klewitz and Hansen (2014) suggest that for future researchers RBV (e.g. Barney, 2001a; Barney, 1991) and NRBV (Hart, 1995) can serve as appropriate theoretical lenses for examining the enablers of environmental improvement in SMEs. Hofmann et al. (2012) also propose that since little is known about factors that can enable SMEs to adopt environmental management practices, using DCs environment specific capabilities can be identified that may underpin the successful implementation of responsible practices in these firms. Moreover, Aragon-Correa and Sharma (2003) assert that a pro-environmental strategy meets the definitional parameters of dynamic capabilities thus DCs can serve as an appropriate theoretical lens for empirical studies on environmental practices of firms. Appreciating the genesis of dynamic capabilities framework from resource based theory, Hart and Dowell (2011) also suggest using these frameworks for examining environmental engagement of firms. Operationalising these theoretical frameworks jointly to investigate the environmental behaviour of SMEs would hence contribute to the literature. For example, how contextual factors interact with firm level factors and underpin the environmental transformation in SMEs, the holistic understanding of this phenomena can be better developed by integrating institutional theory, RBV, NRBV and DCs. In addition, DCs and NRBV have previously been mainly considered for examining the environmental behaviour of large size firms. The use of these theoretical frameworks for investigating environmental engagement of SMEs can, therefore, extend their applicability in terms of their consideration for all sizes of firms (small-medium-large), contributing to their

development as well as the theoretical and methodological advancements in the nascent field of sustainability in SMEs.

The remainder of this chapter reviews these four theoretical frameworks.

### **2.6.1 Institutional theory**

Firms do not operate in isolation. They operate in an institutional environment (Zucker, 1987). The constituents of an institutional environment can include a number of external stakeholders such as regulatory bodies, customers, trade associations, pressure groups, professional organisations, educational institutions and peers or incumbent firms. Collectively, these institutional actors form an organisational field for firms to operate in. According to DiMaggio and Powell (1983, p. 148), an organisational field comprises of 'those organizations that, in the aggregate, constitute a recognized area of institutional life: key suppliers, resource and product consumers, regulatory agencies, and other organizations that produce similar services or products'. Although these actors operate in the same field, they have their own beliefs to follow and objectives to achieve. Yet, over time, they strive to achieve homogenisation, as the field gets more established (DiMaggio and Powell, 1983). Hoffman (1999, p. 352) adds that fields are formed 'around issues that bring together various field constituents with disparate purposes'. For example, considering Pakistan's leather industry, environmental regulatory bodies, customers, intermediary organisations, chemical suppliers and SMEs all operate within an organisational field, and there is one common issue for them to address i.e. environmental degradation. However, organisational fields, being dynamic in nature (Hoffman, 1999; Meyer, 1982), keep changing with the changes in, for example, techno-economic and socio-political factors. The questions such as how firms respond to changes in and pressures from

the environment in which they operate can be effectively answered using the theoretical framework of institutional theory.

Institutional theory is one of the most widely used theoretical frameworks in the field of management. It is a useful theoretical lens to examine the influence of external forces on the structures and behaviours of organisations. In general, this theory asserts that in an organisational field different institutional actors can exert pressure on firms to change their behaviour, practices, processes and strategies to legitimise their existence (Scott, 2010; Oliver, 1991; Oliver, 1988; Scott, 1987; DiMaggio and Powell, 1983; Meyer and Rowan, 1977; Hannan and Freeman, 1977). Therefore, firms are expected to conform to the expectations of an organisational field i.e. they are expected to modify themselves to become compatible with environmental changes in order to achieve social fitness and therefore survive (DiMaggio and Powell, 1983).

While the roots of institutional theory can be traced into the works of scholars such as Parsons (1956a, 1956b), Thompson (1967, 2003) and Hirsch (1975), the form in which it is much used in the field of management can be attributed to neo-institutional theorists like DiMaggio and Powell (1983), Zucker (1987), Scott (1995) and Oliver (1991).

According to Scott (2001), there are three 'pillars' of institutional influences, namely; regulative, normative and cognitive, which can drive organisational change. The regulative pillar entails guiding organisations' behaviour through coercion or legal sanctions, i.e. a command-and-control approach to steer the behaviour of organisations. Therefore, due to the fear of penalties for noncompliance, organisations observe regulatory requirements. For example, SMEs complying with environmental regulations to achieve legitimacy of their operations for avoiding penalties (Revell et al., 2010; Patton and Worthington, 2003).



Scott's (2001) normative pillar refers to firms being obligated by the need for professionalisation, where they are expected to follow standard procedures and industry practices such as ISO 14000 certification (Delmas, 2002). The third pillar, which refers to the cognitive aspect, ascertains that cultural norms, for example, 'eco-Islamic' values (Abdelzaher and Abdelzaher, 2015), are to be observed unquestionably i.e. without any conscious thoughts. It implies that things are taken for granted. Given the three pillars of institutional influences, progressive organisations will develop and/or reconfigure their structures and behaviours in their pursuit of gaining legitimacy from different actors in their organisational field. DiMaggio and Powell (1983) assert that the change processes in organisations to conform to various field actors are driven by different isomorphic pressures. Isomorphism refers to a similarity of the processes or structure of an organisation to those of others, which it may achieve by imitating others or taking measures independently enabling it to become compatible with its environmental characteristics while looking similar to its peers in the field (DiMaggio and Powell, 1983). According to DiMaggio and Powell (1983), isomorphism can assume three different types: coercive, mimetic and normative. Coercive isomorphism can stem from formal pressures. For example, regulatory bodies can exert pressure on firms to comply with environmental regulations. Mimetic isomorphism emerges out of uncertainties, which can push firms to copy others, mainly the best practices, to look as good as others do. For example, if customers ask for adopting environmentally responsible production processes and one firm does that successfully and being considered legitimate attracts good business, other firms in the field are likely to model themselves after that successful firm. Finally, normative isomorphism originates from the need for professionalisation. For example, the potent influence of trade associations, educational institutes, training institutes or any other

intermediary organisations on entrepreneurs, managers and employees to respond positively to environmental challenges by reducing pollution load of their firms.

When responding to changes in and pressures from the organisational field, firms can adopt different response strategies ranging from conformance to reshaping these pressures (Scott, 2008; Oliver, 1991). Oliver (1991) has categorised the strategic responses of firms into five domains, which are: acquiescence, compromise, avoidance, defying and manipulation. While acquiescence and compromise responses entail adhering to institutional demands without questioning these much, avoidance, defying and manipulation refer to a more reactive response i.e. distancing from institutional pressures. It implies that institutions might not necessarily shape actions of actors in the organisational field all the time. Situations can arise when interests and values of actors might push them to create new institutions because existing institutional structure might not be addressing their needs (Zietsma and McKnight, 2009; Lawrence and Suddaby, 2006).

A useful concept that allows understanding the processes of institutional creation is of 'proto-institutions' (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002). These relate to the new 'practices, technologies, and rules that are narrowly diffused and only weakly entrenched, but that have the potential to become widely institutionalized', if these are diffused sufficiently (Lawrence et al., 2002, p. 283). Proto-institutes evolve from collaborations and negotiations between multiple actors who seek to address a common challenge in their organisational field, and in this collaboration process new institutional innovations emerge, compete and resolve into shared logic and practices (Zietsma and McKnight, 2009; Gómez and Atun, 2013; Lawrence et al., 2002). The actors who have the capacity and therefore develop and promote proto-institutions are

called 'proto-institutional sponsors' (Zietsma and McKnight, 2009, p. 150). It is, however, noteworthy that compared to fully established institutions, such as regulations, which are embedded in the system and are more likely to exert coercive isomorphic pressure on the field members to behave in a certain manner for seeking legitimacy of their existence, proto-institutional forces would only have the capacity to generate normative isomorphic pressure because they are weakly entrenched in an organisational field (Lawrence et al., 2002; DiMaggio and Powell, 1983). In a way, proto-institutions may offer informal rules while acting as the (informal) compensatory institutional structures, which can have the ability to fill some of the institutional 'gaps' (Kolk, 2014). Compared to the concept of institutional 'voids' (Silvestre, 2015; Parmigiani and Rivera-Santos, 2015; Mair et al., 2012; Mair and Marti, 2009; Khanna and Palepu, 1997), Kolk (2014) has proposed to use the term institutional 'gaps' for scenarios where formal institutions are in place but are not effective enough to perform their functions sufficiently. For instance, in some subsistence markets it has been observed that, in the presence of less effective formal regulatory institutions, normative institutional forces have been more effective in establishing the successful partnerships amongst different members of the organisational field and thus have addressed the institutional 'gaps' (Rivera-Santos et al., 2012). To summarise, both established institutes and proto-institutes aim at achieving standardisation in the behaviour of field members. Thus, institutional theory can be regarded a useful theoretical lens to examine how conforming to societal expectations can increase legitimacy, reduce uncertainty and increase standardisation amongst organisations in an organisational field (Berrone et al., 2007).

In terms of drawing on institutional theory to study environmental behaviour of firms, there is sufficient evidence showing an established practice of using this theoretical lens to

investigate this phenomenon in different industries and countries (Sarkis et al., 2010; Matten and Moon, 2008; Schaefer, 2007; Berrone et al., 2007; Campbell, 2007; Clemens and Douglas, 2006; Husted and Allen, 2006; Hahn and Scheermesser, 2006; Bansal, 2005; Bansal and Clelland, 2004; Rivera, 2004; Delmas, 2002; Bansal and Roth, 2000; King and Lenox, 2000; Hoffman, 1999; Jennings and Zandbergen, 1995). Given its research agenda (Section 1.3), this study mainly draws on DiMaggio and Powell (1983) with one of its objectives to examine isomorphic pressures driving leatherworking SMEs in Pakistan's unique institutional settings to behave environmentally responsibly (Section 1.5). At the same time, it also seeks to investigate the extent to which the cleaner production centres in this country have been successful in performing a proto-institutional role, offering (informal) compensatory institutional arrangements for addressing the institutional 'gaps' (Kolk, 2014) that constrain environmental improvement in leatherworking SMEs. As a reminder, different governmental institutions, such as the Ministry of Industries and Production (MoIP), Ministry of Commerce (MoC), Pakistan Environmental Protection Agency (PEPA) and Ministry of Science and Technology (MoST) exist in Pakistan confirming the presence of formal institutional set ups in the country, but they have not been effectively supporting leatherworking SMEs for addressing environmental issues effectively (Sections 1.5.2 and 1.5.3). However, cleaner production centres, mainly supported by international sponsors have been providing the support needed for environmental improvement to leatherworking firms (Section 1.5.3). Thus, the concepts of isomorphism, institutional gaps, (informal) compensatory institutional structures and proto-institutions can be helpful for investigating the influence of environment on sustainability practices of leatherworking SMEs in Pakistan.

### ***Criticisms of institutional theory***

While institutional theory has been much appreciated for providing an explanation of the convergent change in organisational structures and behaviours following isomorphic pressures (DiMaggio and Powell, 1983), it has certain limitations. First, it is criticised for presenting firms only as passive actors satisfying institutional demands in an organisational field (Berrone et al., 2007; Milstein et al., 2002; Hoffman and Ventresca, 2002). It is possible that some firms instead of displaying convergent behaviour might adopt divergent change processes in order to develop new practices and processes (Scott, 2010; Berrone et al., 2007; Hoffman, 1999), which can be novel not only to the firm but also to the industry. As a result, firm level strategies and institutional changes can coevolve (Milstein et al., 2002; Hoffman, 2001; Hoffman, 1999). Second, this framework when applied could explain why organisations change their behaviours and structures. However, it does not develop an understanding of how organisations become able to adapt to changes in their external environment (Kostova et al., 2008). It does not explain how changes happen within firms. Thus, it pays limited attention to firms' strategic behaviour, as opposed to other frameworks such as resource-based-view (Barney, 1991), natural-resource-based view (Hart, 1995) and dynamic capabilities framework (Teece, 2007; Helfat et al., 2007; Teece et al., 1997) which are useful for examining how firms create, modify and reconfigure their resources and capabilities to become competitive and achieve better performance. Third, while institutional theory can provide an explanation of organisations' initiatives in response to contextual changes it does not tell us much about the implications of such change initiatives on firms' performance (Berrone et al., 2007).

Given the limitations of institutional theory and building on what Oliver (1997) has also suggested, this study has considered using institutional theory in conjunction with

resource-based view, natural-resource-based view and dynamic capabilities framework for examining the holistic dynamics of environmental sustainability in SMEs of Pakistan's leather industry. Such a hybrid theoretical framework would help better examine changes in the environmental behaviour of SMEs in response to isomorphic pressures exerted by different institutional actors and how these firms develop and leverage needed environmental resources and capabilities for environmental improvement. Meyer et al. (2009) have also supported considering such hybrid theoretical frameworks for better understanding the changes in behaviours and strategies of firms particularly in emerging countries which have different institutional settings compared to developed economies. Moreover, responding to the need for research as identified by Sarkis et al. (2011), a hybrid theoretical framework can contribute to the greening business literature by providing an explanation of the interactive effect of contextual factors and firms' resources and capabilities (Oliver, 1997) on environmental improvement of leatherworking SMEs in Pakistan.

The next three subsections (2.6.2, 2.6.4 and 2.6.3) of this chapter delve into other theoretical frameworks considered suitable for examining the environmental behaviour of SMEs in the Pakistan leather industry.

### **2.6.2 Resource-based view of the firm (RBV)**

Many authors have contributed to the development of RBV (e.g. Eisenhardt and Martin, 2000; Amit and Schoemaker, 1993; Mahoney and Pandian, 1992; Barney, 1991; Wernerfelt, 1984; Penrose, 1959). Although this framework is attributed to Wernerfelt (1984), its roots can be traced in the seminal work of Penrose (1959) who described the firm as a pool of resources and discussed that being an administrative unit, its role is to organise and use

the available resources to generate economic rents. She also argued that resources are the determining factors of firm's growth. Therefore, in order to grow, firms would have to increase their resource stock. Later on, Wernerfelt (1984) discussed that resources could be used to create barriers to entry for earning better economic returns than the competitors. However, to sustain high returns, the barrier creating resources should neither be easily accessible to others nor tradable in the market.

A prominent assertion of RBV is that valuable, rare, inimitable and non-substitutable resources can enable a firm to perform better and gain competitive advantage (Eisenhardt and Martin, 2000; Barney, 1991). According to Barney (1991, p. 102), 'a firm is said to have a *competitive advantage* when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors'. On the other hand, a firm can experience 'a *sustained competitive advantage* when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors *and* when these other firms are unable to duplicate the benefits of this strategy' (Barney, 1991, p. 102).

Within the nascent stream of literature on environmental improvement in SMEs, previous studies have used RBV to examine the resources these firms need to adopt responsible practices and improve their environmental performance (Section 2.4.2). This study, therefore, draws on RBV to investigate what resource base can enable leatherworking SMEs in Pakistan to become environmentally responsible businesses. Another purpose of drawing on this framework is to examine the resources constraining these firms from adopting environmental practices.

### ***Criticisms of RBV***

Although RBV does establish that resources can generate the competitive and sustained competitive advantage, it has been criticised for not providing and explaining the mechanism through which resources get transformed into competitive advantage (Wang and Ahmed, 2007; Eisenhardt and Martin, 2000). Also, some researchers have been critical towards this framework for defining resources in a wider context and not making a distinction between resources and capabilities (Wang and Ahmed, 2007). It has also been criticised for being complex and lacking enough empirical ground (Priem and Butler, 2001). However, the criticism of lacking empirical grounds seems to erode gradually because a number of studies have considered the empirical application of this framework.

Another criticism relates to not considering the 'influence of market dynamism and firm evolution over time' (Wang and Ahmed, 2007, p. 33). Although RBV considers that changes take place in the external environment, these changes are assumed to be gradual and reasonably predictable (Ambrosini et al., 2009). Therefore, the resource portfolio of the firms remains stable with slight improvements in their existing resources. In a relatively fast changing and turbulent environment, advantages attached to the current resources might start to erode, and the firm would lose competitive advantage (Eisenhardt and Martin, 2000). When applied in the dynamic markets, RBV can produce misleading analysis (Wu, 2007). This framework, therefore, seems to establish more relevance for the stable and less for highly dynamic markets (Barreto, 2010; Teece, 2007; Eisenhardt and Martin, 2000).

Finally, a considerable limitation of RBV is that it 'systematically ignores the constraints imposed by the biophysical (natural) environment' on the firm's growth, strategies and performance (Hart, 1995). In order to study the interrelationship between an organisation



and its natural environment, Hart (1995) has proposed an extended version of RBV - the natural-resource-based view of the firm.

### **2.6.3 Natural-resource-based view of the firm (NRBV)**

According to Hart (1995), environmental activities of firms that impact their performance and determine the competitive advantage are based on three distinct capabilities. These capabilities are pollution prevention, product stewardship and sustainable development. Contrary to the pollution control measures that seek to abate pollution through end-of-pipe equipment, pollution prevention capability enables firms to prevent the waste and reduce emissions from the production processes (Hart, 1995). While pollution control measures are expensive because they involve purchases of non-productive pollution control equipment, pollution prevention activities require considerable engagement of employees for continuous improvement in the production processes (Hart, 1995). NRBV also appreciates the cost efficiency of pollution prevention capabilities. It asserts that these capabilities can help firms to utilise their resources efficiently and responsibly, which can reduce the raw material usage, waste and compliance costs. Thus, 'pollution prevention focuses on new capability building in production and operations' of the firm (Hart, 1995, p. 993).

The product stewardship capability is an ability to integrate the 'external (stakeholders) perspectives, into product design and development processes' (Hart, 1995, p. 993). By deploying this capability, firms can address environmental concerns spanning along their entire value chain or life cycle of their production systems (Hart, 1995). Product stewardship capability 'creates the potential for competitive advantage through strategic pre-emption, for example, by securing exclusive access to resources (e.g. green raw

materials) or by establishing standards that are advantageous to the focal company' (Hart and Dowell, 2011, p. 1466). Highlighting the strategic value of this capability, Hart (1995) discusses that by drawing on this capability firms can address the concerns of environmentalists and legislators and that would enhance the reputation of firms. Thus, in addition to the performance advantages, product stewardship capability can also bring reputational benefits for the firms.

Finally, NRBV describes sustainable development capability as an ability of the firm to consider not only the reduction in pollution levels but also to contribute economically and socially, such as reducing poverty (Hart, 1995). As an essential element of sustainable development capability, it proposes that 'firms must build markets in the South while reducing the environmental burden created by this new economic activity' (Hart, 1995, p. 997).

Overall, NRBV emphasises the need to resolve not only the environmental problems but also urges to tackle the economic and social issues. While RBV considers the role of firms' internal resources and capabilities and is generally described to be silent about exogenous factors (Aragon-Correa and Sharma, 2003), the focus of NRBV is both on internal and external environments.

### ***Developments in NRBV***

Considered in terms of theoretical development and empirical application, NRBV does not seem to have made considerable progress. A few papers can be traced (e.g. Michalisin and Stinchfield, 2010; Chan, 2005; Aragon-Correa and Sharma, 2003). For example, Michalisin and Stinchfield (2010) have used this theoretical lens for investigating the impact of

proactive adoption of climate change strategies on the financial performance of leading global publically-traded firms, mostly headquartered in North America, Westerns Europe and Japan. Their study shows that firms adopting climate change strategies more proactively than their peers achieve better accounting performance. On the other hand, Chan (2005) has tested the validity of NRBV for emerging countries like China. By investigating the influence of environmental resources, capabilities and strategies on the environmental performance of foreign invested enterprises in clothing and electronic industries, the author has confirmed that this framework is an appropriate lens to examine the environmental behaviour of firms in less developed countries. However, these studies have used NRBV to investigate the environmental behaviour of large size firms. Therefore, application of this theoretical lens remains limited in the domain of SMEs. Such a gap in literature opens avenues for research into environmental engagement of SMEs using NRBV. This study aims to address the need for such research by examining the environmental behaviour of SMEs in Pakistan's leather industry through this theoretical lens.

While reviewing the development of NRBV, Hart and Dowell (2011) state that relative to the concepts of product stewardship and sustainable development, pollution prevention capability has attracted more attention from researchers. Therefore, for the development of this framework, these authors urge researchers to direct their efforts to explore the product stewardship and sustainable development perspectives of businesses. Hart and Dowell (2011) conclude that while a number of studies have examined the performance implications of resources and capabilities, more research is needed to explore the genesis of environment related resources and the link between them and the firm's capabilities to understand the environmental activities and performance of firms better.

#### **2.6.4 Dynamic capabilities framework (DCs)**

The fourth and final theoretical framework that this study draws on is DCs. The emergence of this framework is generally attributed to Teece et al. (1997). However, its roots can be traced in evolutionary economics (Nelson and Winter, 1982), which examines the 'role of routines and how they shape and constrain the ways in which firms grow and cope with changing environments' (Ambrosini and Bowman, 2009, p. 31). This framework is also regarded an extension of RBV (Barreto, 2010).

In highly dynamic markets, firms need to realign and change their resource base and resource deployment competencies rapidly (Helfat et al., 2007; Teece, 2007; Teece et al., 1997). Those who fail to do so have to struggle for their survival and in some cases may fail and shut-down (Teece et al., 1997). The ability to renew the resource base and existing capabilities in order to meet the challenges of a rapidly changing market is explained as a dynamic capability of the firm (Teece et al., 1997). Dynamic capabilities thus relate to 'the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments' (Teece et al., 1997, p. 516). The effective deployment of these capabilities can bring competitive advantage to firms, which they can sustain through developing 'idiosyncratic and difficult-to-imitate resources' (Teece et al., 1997, p. 513; Barney, 1991). Dynamic capabilities, however, do not influence the output of firms directly, but rather they bring changes to the operational capabilities which then impact the output and performance of the firm (Teece et al., 1997).

After Teece et al. (1997), many authors have contributed to the development of DCs. For example, Eisenhardt and Martin (2000, p. 1107) have described dynamic capabilities as 'the organizational and strategic routines by which firms achieve new resource configurations

as markets emerge, collide, split, evolve, and die'. However, compared to Teece et al. (1997), who regard dynamic capabilities more relevant for highly turbulent market environments, these authors (Eisenhardt and Martin, 2000) assert that these capabilities can be useful both in highly and moderately turbulent markets. Eisenhardt and Martin (2000, p. 1108) also argue that although dynamic capabilities are 'unique and idiosyncratic processes', firms can experience similar outcomes by developing and deploying these capabilities through firm-specific processes. This renders 'equifinal' character to these capabilities (Eisenhardt and Martin, 2000).

### ***Linkage between substantive and dynamic capabilities***

Although the operating or substantive capabilities are differentiated from dynamic capabilities in that the latter bring changes in the former, in practice both affect each other. As Zahra et al. (2006, p. 926) argue that 'dynamic capabilities are affected by and transform substantive capabilities'. Such a linkage between substantive and dynamic capabilities has been viewed as an adaptive cycle in that 'it is not just dynamic capabilities that assist the organization to adapt and evolve but also how well the operating capability performs after reconfiguration or development and how well this performance leads to further learning that informs the future actions of the dynamic capability' (Newey and Zahra, 2009, p. S83). The 'operating capabilities also affect dynamic capabilities by influencing the knowledge that is available for the latter to undertake future reconfigurations of the former' (Newey and Zahra, 2009, p. S97). It implies that organisational knowledge that comprises of the know-how of organisational members can mediate the interrelationship between substantive and dynamic capabilities.

### ***Using dynamic capabilities – the role of managers and social ties***

The managers play an important role in enabling firms to adapt to new situations (Ambrosini and Bowman, 2009). Teece (2007, p. 1346) asserts that 'dynamic capabilities reside in large measure with the enterprise's top management team', who through their entrepreneurial management skills can take different measures in the face of dynamic market environment for maintaining dynamic capabilities to ensure sustainability in the performance and functioning of a firm. Such an entrepreneurial function of management within the dynamic capabilities framework is regarded as 'entrepreneurial managerial capitalism', which 'involves recognizing problems and trends, directing (and redirecting) resources, and reshaping organizational structures and systems so that they create and address technological opportunities while staying in alignment with customer needs' (Teece, 2007, p. 1346-1347). It implicates that the active role of managers in large size firms and of owner-managers in the case of SMEs can serve as one of the key microfoundations for building dynamic capabilities of a firm. However, managers' engagement with the changes in external environment would be largely based on their level of motivations, skills and experience (Zahra et al., 2006). Therefore, the ultimate impact of dynamic capabilities on the firm's performance would be largely dependent on the perceptions, judgements and interpretations of managers about the environmental changes (Ambrosini and Bowman, 2009; Augier and Teece, 2009). From this perspective, the role of human capital, in general, and managers' personal values, in particular, can be crucial for the development and deployment of dynamic capabilities (Augier and Teece, 2009; Dakhli and De Clercq, 2004; Davidsson and Honig, 2003; Coleman, 1988).

Human capital can be individual-specific, firm-specific and industry specific (Dakhli and De Clercq, 2004; Coleman, 1988). Individual-specific human capital includes academic

education, vocational training and managerial and entrepreneurial experience of individuals. Individual-specific knowledge can be used across firms and industries. Firm-specific human capital refers to the knowledge and skills that individuals accumulate and develop while working in a specific firm. The application of firm-specific knowledge and skills is strict to a firm's context and therefore is not applicable across firms and industry. The third form of human capital, industry-specific capital, represents knowledge and skills individuals may gain while working in a particular industry. Industry-specific human capital can be used across firms and industries. Amongst the three forms of human capital described here, firm-specific human capital seems to have key relevance for dynamic capabilities because such human capital would be embedded in firm's processes and routines and since it would be built in a specific context, it would be quite hard to transfer it from one firm to another.

In the case of SMEs, top management team (Teece, 2007) or an entrepreneurial team (Zahra et al., 2006) can be regarded equivalent to an owner-manager who looks after most of the affairs of the firm. Moreover, SMEs are generally established around the personal aspirations and philosophies of owner-managers (Williams and Schaefer, 2013; Holt, 2012). This can make it difficult to isolate the values of SMEs from the values and beliefs of their owner-managers (Williams and Schaefer, 2013; Battisti and Perry, 2011). It implies that personal values of owner-managers (Hemingway, 2005; Hemingway and MacLagan, 2004) and their judgment, perceptions and interpretation about the changes in external business environment can perform a key role in the evolution and deployment of dynamic capabilities in SMEs.

In addition to the values and competences of managers in large size firms or owner-managers in SMEs, the social ties of individuals and firms can also have an influence on dynamic capabilities. Blyler and Coff (2003, p. 678) argue that 'social capital is essential for a dynamic capability in terms of facilitating the acquisition, integration, and release of resources'. It can have more significant impact on the emergence and deployment of dynamic capabilities in the case of SMEs, which because of being resource deficient, often engage in boundary spanning initiatives to access externally available resources (Section 2.4.2). Thus individual ties and inter-firm collaborations can play a vital part in the evolution and effective use of dynamic capabilities (Blyler and Coff, 2003).

### ***Dynamic capabilities and implications for firm performance***

Unlike resources, dynamic capabilities do not have a direct impact on the firm's performance and competitiveness. Their role is to change the lower level capability base of the firm, which can improve its performance through better utilisation of resources. However, it is not necessary that dynamic capabilities would definitely lead to better performance for the firm or gain competitive advantage. Being futuristic in nature, these capabilities are based on the judgements of managers (Augier and Teece, 2009; Ambrosini and Bowman, 2009). If judgments go wrong and the environment is misinterpreted then irrelevant resources would be stocked, which would drain the profits and erode competitive advantage of the firm (Ambrosini and Bowman, 2009). Moreover, dynamic capabilities are expensive to maintain because they require substantial time, effort and committed teams (Ambrosini and Bowman, 2009). While it may be more manageable for large size firms because of having sufficient resources, SME owner-managers would have to make substantial efforts in this regard. Thus, it cannot be assumed that dynamic



capabilities would always bring positive outcomes for firms or would facilitate them to sustain their competitive advantage for a longer-time period (Eisenhardt and Martin, 2000). Nevertheless, for performing consistently, these capabilities would have to maintain both 'technical' and 'evolutionary' fitness which can allow them to effectively perform their function and enable the firm to make its living respectively (Helfat et al., 2007; Teece, 2007).

### ***Criticisms of DCs***

Like any other framework, DCs has also evolved over time. Still, it is in infancy and going through the phase of development. Thus, it has invited a number of criticisms.

Often, the definition of dynamic capabilities is criticised for being tautological (Ambrosini and Bowman, 2009; Arend and Bromiley, 2009; Wang and Ahmed, 2007). While some researchers consider dynamic capabilities as 'structured and persistent', others regard them as 'emergent and evolving' (Wang and Ahmed, 2007, p. 33). According to Barreto (2010), a considerable challenge is to collate the earlier and most recent attributes ascribed to the concept of dynamic capabilities. In order to address this limitation, this author (Barreto, 2010, p. 271) has proposed a new definition of dynamic capabilities i.e. 'dynamic capability is the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base'. Although Barreto (2010) claims to collate the attributes of earlier definitions of dynamic capabilities in their definition, even their definition cannot be regarded a comprehensible one because just adding a definition to the list does not seem to address the limitation of conceptual consensus.

The critics of this framework also argue that largely the literature on dynamic capabilities is concerned with defining the concept alongside assessing the impact of these capabilities on the firm's performance (Barreto, 2010; Wang and Ahmed, 2007). Little is known about how dynamic capabilities themselves emerge. In response, proponents of this framework have provided some explanation about the developmental process of dynamic capabilities (for details, see, for example, Ambrosini et al., 2009).

The framework of dynamic capabilities is also criticised for lacking sound theoretical foundation. According to Arend and Bromiley (2009), for instance, while some dynamic capability theoreticians root their arguments in the economics literature (behavioural and evolutionary economics), others construct their thoughts around the organisational literature (organisational routines). As a result, the 'domain of relevance' or boundaries of dynamic capabilities has not been established (Arend and Bromiley, 2009, p. 81). Arend and Bromiley (2009) suggest that since this framework is mainly concerned with organisations, it should be rooted in organisational theories. However, this criticism has been contested. Helfat and Peteraf (2009), for instance, respond that dynamic capabilities framework is rooted in well-established theoretical frameworks including RBV (Barney, 1991), evolutionary economic theory (Nelson and Winter, 1982) and organisational learning (Zollo and Winter, 2002). All these theoretical lenses are quite helpful in understanding how organisational growth takes place, how routines and processes emerge, how organisations learn and how managerial decisions are made (Helfat and Peteraf, 2009). Thus, the behaviour and performance of the firm can be better understood through DCs.

According to some critics, DCs is not empirically tested across all sizes of firms as this framework has been mostly considered to assess the performance of large size firms. The

two reviews of dynamic capabilities' literature by Wang and Ahmed (2007) and Barreto (2010) provide enough evidence for this criticism. Thus, there is a need for research to address this gap in the literature. Particularly, empirical research is needed in the context of SMEs in order to determine the relevance of dynamic capabilities framework for all sizes of firms (small-medium-large). This research aims to fill such a void in the literature by examining the dynamic capabilities for environmental improvement in leatherworking SMEs in Pakistan. By doing so, it would also combine two streams of literature, DCs and sustainability, because this theoretical framework has not been much used previously to investigate the environmental behaviour of firms, especially SMEs (Hofmann et al., 2012).

While DCs has invited a number of criticisms, it has also been appreciated by its critics for making considerable development (Barreto, 2010). To present this theoretical framework as a mature theory, more contribution is invited both in theoretical and empirical domains (Helfat and Peteraf, 2009; Ambrosini and Bowman, 2009). Moreover, in order to appreciate the potential of DCs, attention should be given to the analysis of internal and external enablers of and inhibitors to dynamic capabilities (Barreto, 2010). This is another area for this study to make a contribution. It seeks to contribute to knowledge by examining the environmental capabilities and their microfoundations in SMEs in a developing economy context, Pakistan, which has distinct institutional settings compared to developed countries (Section 1.5). Its unique institutional structure (Section 1.5) can thus provide an opportunity to explore the context specific enablers and inhibitors of dynamic capabilities for environmental improvement in SMEs.

## Section summary

Taken together all the theoretical frameworks as discussed in this section make an important contribution to our understanding of how institutional actors in an organisational field can exert pressure on firms to change their behaviours and strategies to gain legitimacy of their operations and existence, and how resources and capabilities can serve as valuable assets for firms to perform general business activities like the production and sale of goods and/or services while also taking up specific agendas such as the environmental and social responsibilities. Therefore, institutional theory, RBV, NRBV and DCs can be considered appropriate theoretical lenses for investigating the environmental behaviour of SMEs in the Pakistan leather industry. Collectively these theoretical frameworks can help better understand the isomorphic pressures shaping the environmental behaviour of leatherworking SMEs and can also enable the researcher to investigate the environmental resources and capabilities, and their microfoundations (Felin et al., 2015; Felin et al., 2012; Molina-Azorín, 2014; Barney and Felin, 2013; Teece, 2007), that underpin the adoption of environmental practices in these firms. Since these theoretical frameworks have been developed in the context of developed economies, it is important, however, not to assume their complete applicability in the context of SMEs in developing economies such as Pakistan. For example, the capability of sustainable development (see Section 2.6.3) as proposed by Hart (1995) does not seem to qualify for leatherworking SMEs in Pakistan because these firms having not enough resources are least likely to indulge in off-shore investments.

## **2.7 Chapter summary**

This chapter has presented a review of literature within the research area of environmental behaviour of SMEs. The motivations for and barriers to environmental engagement among SMEs are identified as leading streams of literature. The research into enablers of environmental improvement in SMEs is relatively nascent. Having identified that the literature is dominated by studies in the context of developed economies and that the quantitative studies have certain limitations, the chapter has argued for undertaking a qualitative investigation of environmental engagement of SMEs in the leather industry in Pakistan. Having considered the frameworks of institutional theory, RBV, NRBV and DCs as appropriate theoretical lenses, a hybrid theoretical framework is proposed for undertaking a research that could develop a holistic understanding of the dynamics of environmental behaviour of SMEs.

The next chapter discusses the methodological considerations for this study.

## Chapter 3 Methodology and research methods

### 3.1 Introduction

The preceding chapter has identified research gaps in the extant literature on sustainability in SMEs, while also outlining the research agenda for this research. This chapter presents a discussion on methodological considerations of this study. The choice of methodology and research methods is informed by the need identified for undertaking research that looks into the environmental behaviour of SMEs in an under-researched industry sector and country context: Pakistan's leather industry. The study hence seeks to address the following overarching research question and its related sub-questions (Section 1.3).

#### Main research question

*To what extent do multilevel factors exert isomorphic pressures on leatherworking SMEs in Pakistan to behave environmentally responsibly, and what enables these firms to reduce their environmental footprints in response?*

#### Sub-questions

- (a) What environmental measures do SMEs in Pakistan's leather industry take to reduce their environmental footprints?
- (b) Why do SMEs in the leather industry adopt environmental practices?
- (c) What are the resources and capabilities that enable these firms to become environmentally responsible enterprises?
- (d) What limits leatherworking SMEs from taking environmental measures?

In order to seek answers to the above research questions, this qualitative research adopts a multiple-case study research design, supported by inductive analysis of qualitative data gathered through semi-structured, face-to-face, in-depth interviews with the owners and managers of 22 leatherworking SMEs and different representatives of 19 other stakeholders of Pakistan's leather industry, such as the environmental support institutes, industry associations and input suppliers.

For justifying the choice of methodology and research methods adopted for this study, this chapter is structured in five sections. Following this introduction (Section 3.1), Section 3.2 discusses that, philosophically, this qualitative study is rooted in the social constructionist paradigm because it draws on lived experiences of SME owners and managers with respect to the processes underpinning environmental engagement of their firms. In Section 3.3, the research design of the study is discussed, rationalising the choice of multiple-case study design (Section 3.3.1) while also presenting the demographic profile of study participants in Section 3.3.2. The choice for using purposive and snowball sampling for recruiting the study participants is rationalised in Section 3.3.3. The methods adopted for data collection and analysis are discussed in Section 3.3.4. Section 3.4 reports on ethical considerations of the study. Finally, the chapter concludes with a summary in Section 3.5.

### **3.2 Research philosophy: contrasting traditions of social science**

The research philosophy refers to the perceptions and assumptions of researchers about the existence of reality and approach to gaining knowledge in that reality (Holden and Lynch, 2004, p. 83; Saunders et al., 2004). While having certain beliefs or assumptions about the existence and nature of reality is known as ontology, gaining knowledge in that reality is referred to as epistemology (Easterby-Smith et al., 2008; Holden and Lynch, 2004).

Within social science research, two popular but contrasting philosophical traditions prevail, these are: the positivist (also known as quantitative, objectivist or traditionalist) and the social constructionist (also referred to as qualitative, subjectivist or interpretivist) paradigms<sup>6</sup> (Easterby-Smith et al., 2008; Bryman and Bell, 2007; Hussey and Hussey, 1997).

The positivists believe that the 'social world exists externally and that its properties should be measured through objective methods, rather than being inferred subjectively through sensation, reflection and intuition' (Easterby-Smith et al., 2008, p. 57). Positivism is thus based on the assumption that the reality exists 'out there' about which knowledge can be discovered and communicated to others through 'observation and measurement' (Holden and Lynch, 2004).

Studies rooted in positivist tradition are underpinned by deductive processes examining cause and effect relationships between variables under investigation (Saunders et al., 2004; Holden and Lynch, 2004; Hussey and Hussey, 1997), supported by statistical inferences and large size samples allowing the researcher to produce generalisable findings and testing the relevance of existing theories (Easterby-Smith et al., 2008; Bryman and Bell, 2007; Saunders et al., 2004; Holden and Lynch, 2004; Hussey and Hussey, 1997). Studies following the positivist tradition thus follow highly structured procedures (Bryman and Bell, 2007; Saunders et al., 2004).

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<sup>6</sup> Philosophical traditions have been differentiated in different perspectives. Relative to the positivist, social constructionist appear to have been discussed from many different perspectives such as interpretivist, phenomenologist, anti-positivist, subjectivist and naturalistic standpoints. The detailed discussion on these diverse philosophical perspectives is beyond the scope of this study. In addition to that, there exist a number of other research paradigms, such as relativist, critical theory, feminism, hermeneutics, postmodernism, pragmatism, structuration theory, discussion on each of these is also beyond the scope of this research.



Contrary to positivism, social constructionist philosophy is based on the assumption that reality 'is not objective and exterior, but is socially constructed and given meaning by people' (Easterby-Smith et al., 2008, p. 58). According to this paradigm, multiple realities exist that are informed by the perceptions of individuals, implying that knowledge cannot be discovered rather everything is relative and context specific<sup>7</sup> (Holden and Lynch, 2004; Hussey and Hussey, 1997; Morgan and Smircich, 1980). Therefore, 'people make sense of the world especially through sharing their experiences with others via the medium of language' (Easterby-Smith et al., 2008, p. 58), and the role of a researcher hence is to analyse the different interpretations that people attach to a particular phenomenon in a particular context, through theoretical abstraction based on patterns of data and themes (Bryman and Bell, 2007; Saunders et al., 2004; Hussey and Hussey, 1997; Miles and Huberman, 1994).

Studies underpinned by social constructionism do not aim at achieving empirical generalisation of their findings however these aim for some theoretical generalisations and use reasonably manageable/small samples (Bryman and Bell, 2007; Saunders et al., 2004; Miles and Huberman, 1994). Instead of testing theories, such studies follow an inductive process thereby trying to expand boundaries of knowledge either by extending the existing theories or developing new theories by gathering rich data (Easterby-Smith et al., 2008; Saunders et al., 2004; Hussey and Hussey, 1997). Researchers undertaking studies informed

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<sup>7</sup> Social constructionist philosophy might be seen to fall into two camps (Newton et al., 2011; Burningham and Cooper, 1999; Sismondo, 1993): (1) a 'mild' version that allows for the possibility of a reality existing outside of human perception but that argues that such a reality is not straightforwardly available to human observation but can only be perceived and interpreted through human understanding. Therefore no single account of social reality can exist. (2) A 'strict/strong/radical' version that argues that there is no such thing as a social reality out there but that social reality only exists through human perception and interaction. The distinction between the two is somewhat important, for example when it comes to extrapolating from findings or checking ('triangulating') data from one source against those from another source to achieve greater reliability. A 'mild' constructionism might see some merit in such a procedure, a 'strong' constructionism would not necessarily.

by social constructionist philosophy adopt a flexible structure in their research allowing them to adapt to contextual changes as their research activities progress (Bryman and Bell, 2007; Saunders et al., 2004). Compared to the studies following positivist tradition, research informed by this paradigm generally draws on less structured and more open-ended questions in order to explore alternative explanations and dig deep into how people make sense of the world around them by exploring the processes underpinning their interactions and experiences (Saunders et al., 2004).

To summarise, Easterby-Smith et al. (2008, p. 73) highlight some strengths and weaknesses of positivist and social constructionist philosophical traditions (Table 3.1). While studies rooted in the positivist tradition mainly aim at producing generalisable findings for informing policy, they provide limited insights about the processes underpinning the relationships between variables. In contrast, studies informed by the social constructionist tradition can provide a deeper understanding of the processes that underpin a phenomenon. While such studies can better explain the theoretical relationships, due to the limited generalisation of their findings, these may not become a point of attraction for policy makers.

**Table 3.1: Strengths and weaknesses of different epistemologies**

	<b>Strengths</b>	<b>Weaknesses</b>
<b>Positivist</b>	Can provide wide coverage. Potentially fast and economical. Easier to provide justification of policies.	Inflexible and artificial. Not good for process, meaning or theory generation. Implications for action not obvious.
<b>Social constructionist</b>	Good for processes, and meanings. Flexible and good for theory generation. Data collection is less artificial.	Can be very time consuming. Analysis and interpretations are difficult. May not have credibility with policy makers.

Source: Adapted from Easterby-Smith et al. (2008, p. 73)

Amongst other factors, an understanding of research philosophy is the key to enabling researchers to select appropriate research methodology for their studies, including the choice of relevant research design and methods of collecting and analysing data (Easterby-Smith et al., 2008; Buchanan and Bryman, 2007; Holden and Lynch, 2004).

### **3.2.1 Research approach of this study**

This study is rooted in the social constructionist philosophical tradition employing a qualitative multiple-case study approach (Yin, 2009; Easterby-Smith et al., 2008; Eisenhardt and Graebner, 2007; Eisenhardt, 1989). The rationale is that such an approach is considered prudent for undertaking research in an area that is in its infancy, and, as it is discussed at a number of places in this thesis (e.g. Section 2.5), the research on sustainability in SMEs is indeed a nascent area of research.

A larger number of studies looking into the environmental behaviour of SMEs have been quantitative (e.g. Hofmann et al., 2012; Brammer et al., 2012), focusing on ‘what’ environmental practices SMEs adopt and ‘what’ factors drive and limit their environmental engagement. However, such studies provide limited explanation of the processes about ‘why’ and ‘how’ SMEs adopt environmentally responsible practices. These questions can be better addressed through a qualitative inquiry. The relevance of qualitative approach to investigate the environmental behaviour of SMEs can also be judged from the fact that recently researchers have started adopting this approach. Some exemplary studies include; Hamann et al. (2015), Halme and Korpela (2014), Williams and Schaefer (2013), Sampaio et al. (2012) and Williamson et al. (2006). For example, Hamann et al. (2015) used qualitative approach in order to investigate the underlying reasons of differentiation in environmental commitment and innovation in South African wineries. Similarly, Halme and Korpela (2014)

adopted qualitative approach because their aim was to examine the underlying processes of multiple configurations of resources leading to responsible innovations in Nordic SMEs. Williams and Schaefer (2013) adopted social-constructionist approach with the purpose of capturing owner-managers' own understanding of climate change issues and uncovering their motivations for engaging with environmental issues. Sampaio et al. (2012) justified their choice for using the qualitative design on the ground that 'little research has been undertaken to examine the impact of formal environmental management systems (EMS) on small firms' behaviour' and therefore an in-depth understanding of such phenomena could be possible through a qualitative study. There is hence sufficient evidence suggesting to contribute to this nascent field of research by using qualitative approach. In the context of Pakistan's leather industry which has remained underexplored from the perspective of environmental behaviour of SMEs, qualitative approach is considered suitable for gaining better insights into what SMEs in this industry sector do for reducing their environmental footprints and why and how they do that. Moreover, according to the best of researcher's knowledge, there is no other study that has examined how and to what extent multilevel environmental drivers interact to shape environmental behaviour of leatherworking SMEs in Pakistan, and what processes underpin the accumulation and deployment of resources and capabilities needed to enable these firms to become environmentally responsible businesses. Even, generally, SMEs are relatively neglected from this perspective of investigation (Section 2.5). Building on the social constructionist philosophical tradition, this study, therefore, addresses the need for such research by examining the environmental behaviour of leatherworking SMEs in Pakistan.

In Pakistan's leather industry there are SMEs which are more or less engaged environmentally, and some are still disengaged. On the basis of their environmental

behaviour they can be classified as (a) environmentally progressive, (b) environmentally moderate and (c) environmentally distanced SMEs (for details, see Chapter 4). Environmentally progressive SMEs display a higher level of environmental commitment and proactively take more advanced environmental measures, such as the adoption of the latest cleaner technologies and undertaking R&D for process innovations (Section 4.2.1), for becoming eco-friendly businesses. While environmentally moderate SMEs also display a higher level of environmental commitment than environmentally distanced SMEs, unlike their environmentally progressive peers they do not take many advanced environmental measures. A main reason for this is the absence of sufficient economic resources needed for taking such measures. However, SMEs in this category proactively adopt other relatively less expensive cleaner production practices such as the conservation of inputs, like water and chemicals, through process innovations that enable them to reduce their pollution load (Section 4.2.2). Contrary to both these categories, environmentally distanced SMEs operate with a very low level of environmental commitment (Section 4.2.3). They do not proactively take environmental measures. Even if they take any measure, for this, they adopt a reactive approach (del Brío and Junquera, 2003; Aragon-Correa and Sharma, 2003; Tilley, 1999b) that is largely led by economic rationale and not by environmental logic. However, the knowledge about why and how SMEs ultimately fall into one category or the other on the basis of their environmental behaviour is much based on the experience that these firms have gained over the years. Different contextual factors could have influenced the environmental decisions of these firms, such as regulatory, customer and social pressures. While the ultimate response to such pressures can be environmental engagement or disengagement, the underlying processes informing environmental decisions of firms are more likely to be idiosyncratic in nature which can only be examined by exploring firm level

experiences and then comparing those to find similarities and differences in processes across firms. For example, SMEs may acquire environmental knowledge for becoming eco-efficient but the routines and processes to acquire that knowledge can differ or may be similar across firms. The need for an in-depth investigation of such processes and uncovering of contextual realities thus substantiates the choice of the researcher for rooting this study into the social constructionist philosophical tradition.

Holden and Lynch (2004) discuss that presently very few researchers make extreme assumptions that the positivist and social constructionist traditions entail, rather the assumptions are considered at a moderate level. Moreover, Marshall and Rossman (1989) argue that assuming a certain level of flexibility in research design may be needed allowing a researcher to examine an issue effectively. I acknowledge that when operationalising social constructionist philosophy by adopting grounded analysis approach (Gioia et al., 2013; Easterby-Smith et al., 2008) to data analysis (Section 3.3.4(c)), I follow the assumptions of this philosophical paradigm at a 'mild' level (Newton et al., 2011; Burningham and Cooper, 1999; Sismondo, 1993).

While the researcher recognises environmental engagement of leatherworking SMEs in Pakistan as an objective reality, he also appreciates the importance of exploring firm level experiences and processes of becoming environmentally progressive or distanced business. At the same time, this study does not draw on grounded theory in its strict sense that the researcher should start fieldwork without prior knowledge (Corbin and Strauss, 2008; Strauss and Corbin, 1994; Glaser and Strauss, 1967), but rather it draws on the principles of grounded analysis as suggested by Easterby-Smith et al. (2008). As a doctoral student, the researcher had to review both theoretical and empirical literature streams for

identifying research gaps, so he was familiar with literature before starting fieldwork. However, he entered into the field for data collection with an open mind allowing him to explore ground realities rather than imposing literature informed concepts on field investigations.

The next section discusses how the social constructionist philosophy underpins the considerations for selecting appropriate research design and methods of data collection and analysis for this study.

### **3.3 Research design – options for a researcher**

The research design refers to the criteria that are used to evaluate research issues (Saunders et al., 2004). Common research designs are: experimental design, cross-sectional design, longitudinal design, case study design and comparative design (Yin, 2009; Ridder et al., 2009; Easterby-Smith et al., 2008; Bryman and Bell, 2007; Saunders et al., 2004; Hartley, 2004; Hussey and Hussey, 1997). The distinct features of these designs are summarised in Table 3.2.

**Table 3.2: Representative characteristics of research designs**

<b>Research design</b>	<b>Representative characteristics</b>
<b>Experimental design</b>	<p>Aims at identifying cause and effect relationships by controlling the behaviour of variables under investigation.</p> <p>Can be useful while conducting an evaluation research.</p> <p>Is generally used in quantitative studies.</p> <p>Difficult to apply when researching organisations because a researcher cannot effectively govern the behaviour of organisations.</p>
<b>Cross-sectional design</b>	<p>Involves data collection at a single point in time about a number of cases.</p> <p>Data are generally gathered in quantitative form.</p> <p>Patterns of association among the variables of interest are studied.</p> <p>Not considered quite effective in developing an understanding about causal effects.</p> <p>Can be used in both quantitative (such as social survey research) and qualitative studies (focus group research).</p>
<b>Longitudinal design</b>	<p>Is helpful in mapping changes.</p> <p>Generally, data are gathered in two different time periods, but from or about same subjects.</p> <p>Is attributed for providing somewhat better understanding about the direction of causal influences.</p> <p>Application is possible in both quantitative studies (such as surveys) and qualitative investigations (such as ethnographic research).</p>
<b>Case study design</b>	<p>A basic case study refers to an intensive analysis of a single case.</p> <p>A case can be an organisation, a location, a person or an event.</p> <p>Can help better investigate a contemporary phenomenon in real life context.</p> <p>Good for expounding unique features of a case.</p> <p>Can be adopted in both quantitative and qualitative studies.</p> <p>Can be used to provide description and for theory generation, extension, and refinement.</p>
<b>Comparative design</b>	<p>Is used to study two or more contrasting cases by using more or less identical methods.</p> <p>Multiple-case study design can generate compelling arguments through evidence from multiple cases.</p> <p>Helps improve theory building.</p> <p>Can be used in both quantitative and qualitative studies.</p>

Sources: Ridder et al. (2009), Yin (2009), Easterby-Smith et al. (2008), Bryman and Bell (2007), Saunders et al. (2004), Hartley (2004) and Hussey and Hussey (1997)



### **3.3.1 The research design of this study**

This study adopts the comparative design by using multiple cases. Yin (2009, p. 18) defines that a case study is 'an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'. In the same vein, Johnston et al. (1999, p.203) explain that a case study research 'consists of a detailed investigation that attempts to provide an analysis of the context and processes involved in the phenomenon under study'. Researchers can hence consider using case studies for examining context specific contemporary phenomena, and building on the uniqueness of the context they can generate, extend and refine theories (Ridder et al., 2009; Eisenhardt, 1991; Dyer and Wilkins, 1991). However, a limitation of a case based study can be that due to being context specific the findings of research may lose relevance when taken out of a specific context (Hartley, 2004).

Easterby-Smith et al. (2008) recommend that the choice of research design should be made on the basis of philosophical assumptions of the study. This study is rooted in the social constructionist paradigm, assumptions of which suggest researchers to undertake context based investigations. The multiple-case study design is therefore considered as an appropriate choice for investigating the environmental behaviour of SMEs in the context of Pakistan's leatherworking industry. Moreover, research on sustainability in SMEs is a stream of literature that is still in need of both theoretical and empirical advancements (Jamali et al., 2015; Hamann et al., 2015; Klewitz and Hansen, 2014; Hofmann et al., 2012). For the development of such an emergent field of research, case studies can serve as a useful research design.

For determining the relevance of research design, Yin (2009) has proposed multiple criteria i.e. to consider the nature of research question, degree of control of a researcher on events and focus on contemporary as opposed to historical events (Table 3.3).

**Table 3.3: Criteria for choosing an appropriate research design**

Method	Form of research question	Requires control of behavioural events?	Focuses on contemporary events?
Experiment	how, why?	yes	yes
Survey	who, what, where, how many, how much?	no	yes
Archival Analysis	who, what, where, how many, how much?	no	yes/no
History	how, why?	no	no
Case Study	how, why?	no	yes

Source: Yin (2009, p. 8)

As is already discussed at several points in the thesis (e.g. Section 2.5), this study seeks to examine ‘why’ and ‘how’ SMEs in Pakistan’s leather industry adopt environmental practices. Following Yin (2009), three research methods can help address such questions; these are experiment, history and case study. However, considering the second parameter of having control of behavioural events, experiment method is out of consideration for this study. The researcher does not have the capacity to influence or control (environmental) behaviour of leatherworking SMEs. Moreover, influencing the (environmental) behaviour of SMEs is not an objective of this study. It has been conducted in natural settings. As far as the history method is concerned, it does not look into contemporary issues whereas this research focuses on contemporary environmental practices of SMEs and environmental interventions in Pakistan’s leather industry. Multiple-case study research design is hence considered a suitable choice for this research.

### **3.3.2 The unit of analysis and the research cases**

Voss and Voss (2000, p. 78) argue that 'single-industry studies are warranted - even preferred - when the internal validity of the study is more important than the generalizability of the results'. This qualitative study examines the environmental behaviour of Pakistani SMEs in an economically vibrant sector, leather industry. The unit of analysis in this research is thus a leatherworking SME.

SMEs are not a homogenous group of firms. Therefore, their environmental practices and strategies can also differ from each other (Section 2.2). A single SME would not have provided sufficient information needed to probe the research problem effectively. In contrast to a single case based study that can be useful for investigating a unique and extreme case or a phenomenon, the use of multiple cases has been considered suitable for making findings of this study more robust and trustworthy (Symon and Cassell, 2012; Bluhm et al., 2011; Tracy, 2010; Yin, 2009; Pratt, 2008; Easterby-Smith et al., 2008; Schwandt et al., 2007; Lincoln and Guba, 1985). In fact, evidence gathered from multiple sources can be compelling for substantiating findings of a study (Yin, 2009; Eisenhardt and Graebner, 2007). Multiple cases also provide an opportunity for cross case comparison, which can enrich theoretical discussion about research findings (Yin, 2009; Eisenhardt and Graebner, 2007; Stake, 2005; Saunders et al., 2004). It is, however, noteworthy that the rationale for considering multiple cases in this study is not to increase sample size for generalising its empirical findings. Doing so would be against the tradition of social constructionist philosophy, which underpins this research. Multiple cases are considered for a better understanding of issues and enriching theoretical discussion drawing on diverse perspectives as explored across cases (Stake, 2005). Finally, another rationale for using multiple cases is that some recent studies have also considered this approach to examine

the environmental behaviour of SMEs (e.g. Halme and Korpela, 2014; Blundel et al., 2013; Parry, 2012; Lee, 2009). Halme and Korpela (2014), for example, used multiple case approach on the basis that it could allow them theorising following ‘replication logic’ (Eisenhardt, 1989). Similarly, Blundel et al. (2013) used multiple cases enabling them to undertake cross-case comparison and explore the interrelationships between multiple causal factors in ways that were sensitive to context. Thus, these illustrative studies establish the relevance of multiple case approach as an appropriate research design for undertaking research in this nascent area of literature.

***(a) Demographic characteristics of sample firms***

Table 3.4 summarises the demographic profiles of sample SMEs.

In terms of age, sample firms were as old as established in 1949 and as young as working since 2005 (Table 3.4). 2 firms (SME 4 and SME 13) were from the decade of 1970s. 7 firms (SME 6, SME 8, SME 9, SME 10, SME 16, SME 20 and SME 22) had started their operations in 1980s. Another 7 firms (SME 1, SME 3, SME 7, SME 11, SME 14, SME 18 and SME 21) were from the decade of 1990s. 5 SMEs (SME2, SME 5, SME 12, SME 15 and SME 17) joined the industry in early 2000s. And one firm was operating since 1949 (SME 19). It is thus a fairly diverse group of firms to capture the nature and challenges of environmental degradation associated with the operations of leather industry in Pakistan since its inception on the map of the world in 1947.

**Table 3.4: Demographic profiles of sample firms**

Cases	Founded	City	Size	Number of employees	Ownership structure	Management structure	Product(s)	Market(s) of operation	Educational profile of SME owner-managers	Environment specific qualifications / training of SME owner-managers	Geographical positioning of the firm	Firm registered with tax department?	Person(s) interviewed	No. of interviews
SME 1	1992	Kasur	Small	10-15	Partnership	Directly managed by owner-managers	Wet blue	Domestic	One owner was graduate, and the other had completed school level education	Informally acquired environmental knowledge, for example, from the team of wastewater treatment plant.	Situated in a larger tannery cluster having access to the common effluent treatment facility	Yes	Owner-managers	2
SME 2	2001	Kasur	Medium	50 - 60	Sole proprietorship	Directly managed by owner-manager, with support from a couple of production managers (leather technologists)	Finished leather	Export	Postgraduate	Informally acquired environmental knowledge, for example, from the team of wastewater treatment plant, customers and input suppliers.	Situated in a larger tannery cluster having access to the common effluent treatment facility.	Yes	Production manager	1
SME 3	1992	Kasur	Small	15-20	Sole proprietorship	Directly managed by owner-manager	Finished leather	Domestic and export	Intermediate	Informally acquired environmental knowledge, for example, from the team of wastewater treatment plant.	Situated in a larger tannery cluster having the common effluent treatment facility.	Yes	Owner-managers	2

SME 4	1974	Sheikhupura	Medium	200-240	Sole proprietorship	Directly managed by owner-manager, with support from a team of production managers (leather technologists)	Finished leather	Export	Postgraduate	Formal qualification: Degree in Leather Technology from NENE College UK, and also learned informally from CPI/NEC, PTA, product testing labs, BLC and input suppliers.	Isolated, but has an own wastewater treatment plant.	Yes	Manager	1
SME 5	2001	Kasur	Medium	50 - 60	Sole proprietorship	Directly managed by owner-manager, with support from a couple of production managers (leather technologists)	Finished leather	Export	Postgraduate	Informally acquired environmental knowledge from the team of wastewater treatment plant, customers and input suppliers.	Situated in a larger tannery cluster having the common effluent treatment facility.	Yes	Owner-manager	2
SME 6	1989	Sialkot	Small	6 - 7	Sole proprietorship	Directly managed by owner-manager	Finished leather	Domestic	Intermediate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, and earning diplomas.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	2

SME 7	1997	Sialkot	Medium	60-70	Partnership	Directly managed by owner-managers, with support from a couple of production managers (leather technologists)	Finished leather	Domestic	School Level Education	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, in addition to learning from input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	2
SME 8	1989	Sialkot	Medium	100	Sole proprietorship	Directly managed by owner-manager, with support from a couple of production managers (leather technologists)	Gloves, workwear, motorbike suits	Export	Graduate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, in addition to learning from input suppliers.	Isolated, without any access to wastewater treatment facility.	Yes	Owner-manager	1
SME 9	1984	Sialkot	Medium	55-70	Sole proprietorship	Directly managed by owner-managers, with support from a couple of production managers (leather technologists)	Leather garments	Export	Graduate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, in addition to learning from input suppliers.	Isolated, without any access to wastewater treatment facility.	Yes	Owner-manager and general manage	2

SME10	1988	Sialkot	Medium	50	Sole proprietorship	Directly managed by owner-manager	Working gloves	Domestic and export	Intermediate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, in addition to learning from input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	1
SME11	1992	Sialkot	Medium	40-50	Sole proprietorship	Directly managed by owner-managers, with support from a manager	Leather processing services	Domestic	School Level Education	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars, in addition to learning from input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager and general manage	2
SME12	2005	Kasur	Medium	50-60	Partnership	Directly managed by owner-managers, with support from a couple of production managers	Finished leather for shoes and garments	Domestic and export	Intermediate	Informally acquired environmental knowledge, for example, from CPI and PTA by attending workshops and seminars, in addition to learning from input suppliers.	Isolated, without any access to wastewater treatment facility.	Yes	Owner-manager	2



SME13	1971	Kasur	Medium	150-200	Partnership	Directly managed by owner-managers, with support from a team of production managers (leather technologists)	Semi-finished Leather for shoes, sofas, jackets, upholstery	Domestic and export	School Level Education	Informally acquired environmental knowledge, for example, from NEC, PTA and KTWMA by attending workshops and seminars, in addition to learning from input suppliers.	Isolated, but have own wastewater treatment facility.	Yes	Owner-manager and other partners	2
SME14	1996	Sialkot	Small	10-12	Sole proprietorship	Directly managed by owner-manager	Finished leather for gloves	Domestic	Graduate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	1
SME15	2001	Sialkot	Medium	200	Partnership	Directly managed by owner-managers, with support from a team of production managers (leather technologists)	Leather garments	Export	Graduate	Formal qualification: Degree in Leather Technology from NENE College UK, and also learned informally from CPC, PGMEA, product testing labs, and input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant, but have own wastewater treatment facility.	Yes	Owner-manager	2

SME16	1989	Sialkot	Medium	40-60	Sole proprietorship	Directly managed by owner-managers, with support from couple of production managers (leather technologists)	High-performance leather clothing	Export	Graduate	Formal qualification: Degree in Leather Technology from NENE College UK, and also learned informally from CPC, PGMEA, product testing labs, and input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	1
SME17	2003	Sialkot	Medium	30-40	Sole proprietorship	Directly managed by owner-manager	Gloves	Domestic and export	Intermediate	Formal qualification: Diploma from Leather Technology Institute Gujranwalla, and also learned informally from CPC and input suppliers.	Situated in a smaller tannery cluster without the facility of the common effluent treatment plant.	Yes	Owner-manager	1
SME18	1992	Sialkot	Medium	100	Sole proprietorship	Directly managed by owner-managers, with support from 3 production managers (leather technologists)	Leather garments, gloving leather, shoe upper, motorbike leather and fancy leather	Export	Graduate	Informally acquired environmental knowledge, for example, from CPC by attending workshops and seminars.	Isolated, without any access to wastewater treatment facility.	Yes	General manager and production manager	2

SME19	1949	Muridkey	Medium	200-240	Partnership	Directly managed by owner-managers, with support from a team of production managers (leather technologists)	Leather shoes	Domestic and export	Graduate	Informally acquired environmental knowledge, for example, from NEC and PTA by attending workshops and seminars, in addition to learning from input suppliers.	Isolated, but have own wastewater treatment plant.	Yes	Owner-manager	2
SME20	1980	Karachi	Medium	200-250	Sole proprietorship	Directly managed by owner-managers, with support from a team of production managers (leather technologists)	Finished leather	Domestic and export	Graduate	Informally acquired environmental knowledge, for example, from NEC, PTA and management of effluent treatment plant by attending workshops and seminars, in addition to learning from input suppliers.	Situated in a larger tannery cluster having access to the common effluent treatment facility.	Yes	General manager	1
SME21	1991	Karachi	Medium	100-120	Sole proprietorship	Directly managed by owner-managers, with support from three managers	Finished leather	Domestic and export	Intermediate	Informally acquired environmental knowledge, for example, from the management of effluent	Situated in a larger tannery cluster having access to the common effluent	Yes	Owner-manager	1

										treatment plant by attending workshops and seminars.	treatment facility.			
SME22	1985	Karachi	Small	15-20	Sole proprietorship	Directly managed by owner-manager	Leather garments	Domestic and export	Intermediate	Informally acquired environmental knowledge, for example, from the management of effluent treatment plant by attending workshops and seminars.	Situated in a larger tannery cluster having access to the common effluent treatment facility.	Yes	Owner-manager	2
														35

Source: Developed by the researcher based on interview data, fieldwork journal and pictures taken during field visits.

In terms of geographical concentration, sample firms were situated in the main tannery clusters including Kasur, Sheikhupura, Sialkot, Muridkey and Karachi (Table 3.4). This provided a border perspective of the leather industry in Pakistan<sup>8</sup>. Kasur and Karachi are the largest tannery clusters in the country. The Kasur cluster includes more than 250 tanneries (small, medium and large), and more than 150 firms (small, medium and large) operate from the Karachi cluster. Sialkot also contains a considerable number of firms but, compared to Kasur and Karachi regions, they are not situated in great proximity to each other. In fact, Sialkot region is divided into more than ten smaller clusters, in which more than 200 tanneries (mostly small and medium sized) are operating. Relative to these three areas, the population of tanneries in the Sheikhupura and Muridkey regions is lesser, and firms are more scattered, not even forming smaller clusters as in the Sialkot region.

There is no universally accepted definition of SMEs. Depending on the nature and context of the industry sector their size is differently determined, and it is also true in Pakistan (Aftab et al., 2010, p. 8-21). However, Small and Medium Enterprises Development Authority (SMEDA)<sup>9</sup>, a government agency working for the development and growth of SMEs in Pakistan, defines their size on the basis of number of employees (up to 250), paid up capital (up to Rs. 250 million) and sales volume (up to Rs. 250 million). Some studies have, however, measured the size of tanneries in Pakistan in terms of a firm's capacity to process skins per day (e.g. Khan, 2002). A tannery can be regarded as small if it has the

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<sup>8</sup> No firms were recruited from Khyber Pakhtunkhwa and Baluchistan provinces because of the instability in security situation in those regions. While there are some tanneries in these two provinces, the areas covered in this study are the main hubs of leather industry in Pakistan.

<sup>9</sup> [http://www.smeda.org/index.php?option=com\\_fs&view=faq&catid=3&faqid=48](http://www.smeda.org/index.php?option=com_fs&view=faq&catid=3&faqid=48)

capacity to process less than 2000 skins per day, compared to a medium size tannery with a capacity to process 2000-5000 skins per day (Khan, 2002, p. 129). A limitation of following this definition could be that study participants would not have informed about their exact level of production. At the same time, it could be difficult to ascertain if firms were operating at full capacity or below capacity. Therefore, consistent with generally followed criteria, the number of employees (Aftab et al., 2010, p. 8-21), this study defines the size of sample firms on the basis of the number of people involved in their operations (including SME owner-manager). A firm operating with no more than 250 people was considered a medium sized business, compared to a small sized firm operated by less than 25 people (Table 3.4). Thus, eighteen of the sample firms were of medium size (SME 2, SME 3, SME 4, SME 5, SME 7, SME 8, SME 9, SME 10, SME 11, SME 12, SME 13, SME 15, SME 16, SME 17, SME 18, SME 19, SME 20 and SME 21) and four firms were of small size (SME 1, SME 6, SME 14 and SME 22) (Table 3.4).

In terms of ownership structure, sixteen of the sampled firms were operating as sole proprietorships (SME 2, SME 3, SME 4, SME 5, SME 6, SME 8, SME 9, SME 10, SME 11, SME 14, SME 16, SME 17, SME 18, SME 20, SME 21 and SME 22), compared to the other six which were partnerships (SME 1, SME 7, SME 12, SME 13, SME 15 and SME 19) (Table 3.4). While, every sampled firm was directly managed by its owner-manager, the owner-managers of medium sized firms (for example, SME 2, SME 4, SME 5 and SME 7, SME 13, SME 15, SME 19 and SME 20) had recruited managers, especially the leather technologists, to have some support for efficiently monitoring the production activities of their businesses. In contrast, owners of smaller firms (for example, SME 1, SME and SME 6) were the sole managers of their businesses.

Sample SMEs were producing a wide range of leather and leather related products. These included wet blue, simple finished leather, fancy finished leather, leather garments such as jackets, workwear, high-performance leather clothing for sports such as motorbike suits, shoe upper, leather shoes, simple leather gloves, working leather gloves and sofa leather (Table 3.4). The exception was SME 11, which instead of producing and selling leather for itself was providing leather processing services to a number of smaller leatherworking firms in Sialkot region.

In terms of their markets of operation, ten of the sampled firms were directly or indirectly selling their products to international buyers, while also serving customers in the domestic market (SME 3, SME 7, SME 10, SME 12, SME 13, SME 17, SME 19, SME 20, SME 21 and SME 22) (Table 3.4). Eight of the sample firms were only export-oriented businesses (SME 2, SME 4, SME 5, SME 8, SME 9, SME 15, SME 16 and SME 18) (Table 3.4). The major export market for the majority of sample firms was the European region, including countries such as the UK, Germany, Italy, France, Holland and Belgium. Some firms were also selling to the USA (for example, SME 16) and China (for example, SME 2 and SME 22). Two firms had customers to serve in the Middle East region as well (SME 3 and SME 14). Yet, four firms were serving customers only in the local market (SME 1, SME 6, SME 11 and SME 14). The majority of firms operating in the domestic market only were of small size.

The majority of sample firms was owned and managed by educated entrepreneurs. Three owner-managers (SME 2, SME 4 and SME 5) had attained postgraduate degrees (Table 3.4). Nine owner-managers (SME 1, SME 8, SME 9, SME 14, SME 15, SME 16, SME 18, SME 19 and SME 20) were graduates, bachelor degree holders. Seven owner-managers (SME 3,

SME 6, SME 10, SME 12, SME 17, SME 21 and SME 22) had attained education up to the intermediate level. And only three owner-managers (SME 7, SME 11 and SME 13) were found to have attained basic school education.

In terms of environment-specific qualifications and learning, almost all SME owner-managers were seen to have been acquiring environmental knowledge through informal sources (for detail, see, for example, Section 6.2), for example by attending the trainings, workshops, lectures and seminars that were organised by various intermediary organisations such as the Cleaner Production Centre (CPC), Cleaner Production Institutes (CPI), Pakistan Tanners Association (PTA), Pakistan Gloves Manufacturers and Exporters Association (PGMEA), management of effluent treatment plants, government departments such as Small and Medium Enterprises Development Authority (SMEDA) and input suppliers like the chemicals and cleaner technology sellers (Table 3.4). However, owner-managers of some SMEs were also seen to have attained formal degrees in leather technology from an internationally known institute – Institute for Creative Leather Technologies (ICLT) Northampton, UK, formerly known as Nene College of Higher Education. Such owner-managers were second-generation entrepreneurs and were from relatively progressive firms preparing themselves to better meet the environmental challenges of their businesses in the future by gaining formal industry-specific qualifications and improving their ‘eco-literacy’ skills (Tilley, 2000), in addition to the informal environmental learning from local sources as mentioned above.

In terms of their geographical placement, some of the sample firms were operating from the larger tannery clusters (Kasur and Karachi leatherworking clusters) having the facility

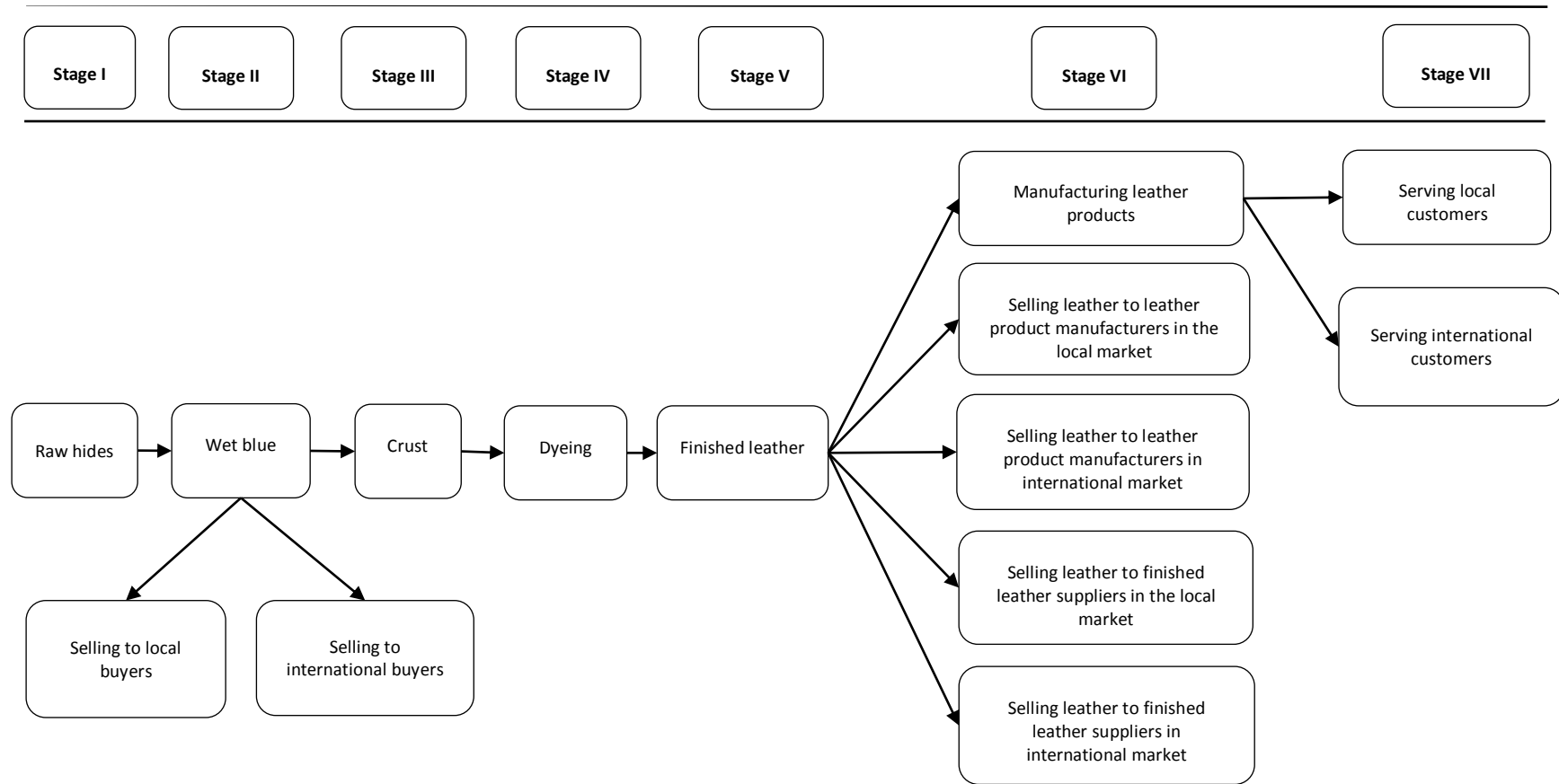


of common effluent treatment plants. Firms belonging to these areas did not have to invest in end-of-pipe pollution treatment technologies, they were positioned well to benefit from the collaborative technological assets which they might not have been able to afford otherwise due to the scarcity of economic resources. Such firms in the sample were SME 1, SME 2, SME 3, SME 5, SME 21 and SME 22 (Table 3.4), with the exception of SME 20 which was a medium sized, resource rich firm but because of having access to the common effluent treatment plant had not considered investing in its own plant. Some of the sample firms were operating from those areas which did not have the facility of common effluent treatment such as Sialkot, Muridkey and Sheikhpura. Amongst these firms, less resource rich, such as SME 6, SME 7, SME 10, SME 14, SME 16 and SME 17 (Table 3.4), had adopted the pollution prevention measures allowing them to curtail their pollution loads within the house (for example, through cleaner production practices). However, the resource rich and operationally more active firms, such as SME 4, SME 13, SME 15 and SME 19, had adopted both pollution prevention and pollution control measures in that they had set up their own effluent treatment plants while they were also operationalising the cleaner production practices.

In Pakistan, firms that get themselves registered with the tax department get a National Tax Number (NTN), and therefore are regarded as units operating in the formal sector. Such firms pay tax to the government to seek legitimacy of their businesses operations. In this study, all the sample firms were registered with the tax department and had their NTNs (Table 3.4). Thus, they were operating within the formal sector.

The supply chain for leatherworking firms in Pakistan can be viewed as an activity comprising of seven stages (Figure 3.1), starting with buying of raw hides (Stage I), leading to the production of wet blue (Stage II) and crust (Stage III) which is then dyed (Stage IV) to produce finished leather (Stage VI). Finally (Stage VII), finished leather can be used to manufacture leather products, sold to leather product manufacturers in the local and international markets, and to finished leather suppliers in the domestic and international markets (Figure 3.1).

**Figure 3.1: Main supply chain stages of leather production**



Source: Developed by the researcher.

While Appendix-II contains the diagrammatic presentation of supply chain positioning of each sample firm, Table 3.5 below presents a collated summary of that. In the table, boxes marked as 'x' denote that firm is not involved in the corresponding stage of leather production. For columns 2 to 6 (Stage I to Stage V), boxes marked as '✓' represent firm's engagement with the corresponding stage of leather production. Column 7 (Stage VI) summarise information about if the firms produce just finished leather to sell or they also manufacture leather products. Finally, column 8 (Stage VII) contains information about if the firms manufacture leather products (Activity 'A' in column 7) then where do they sell i.e. in the local market or in international markets.

The patterns of positioning of SMEs across the supply chain revealed both commonalities and contrasts across the sample firms. Fourteen firms (SME 1, SME 3, SME 4, SME 6, SME 7, SME 9, SME 10, SME 12, SME 13, SME 15, SME 18, SME 19, SME 20 and SME 21) were buying raw hides to manufacture wet blue, compared to the other eight firms (SME 2, SME 5, SME 8, SME 11, SME 14, SME 16, SME 17 and SME 22) for whom the supply chain started with direct purchasing of wet blue (Table 3.5). However, SME 11 was an exception because it was not buying and selling wet blue for itself. This firm was operating as a service provider for other firms, which were generally smaller not having sufficient economic resources needed to buy the expensive machines to process leather that SME 11 had housed.

**Table 3.5: Summary of supply chain positioning of sample firms**

	Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI	Stage VII
						A- Manufacturing leather products	Serving local customers (L)
						B- Selling leather to leather product manufacturers in the local market	Serving international customers (I)
						C- Selling leather to leather product manufacturers in international market	
						D- Selling leather to finished leather suppliers in the local market	
						E- Selling leather to finished leather suppliers in international market	
	Raw hides	Wet blue 1- Selling to local buyers 2- Selling to international buyers	Crust	Dying	Finished leather		
SME1	✓	✓ (1)	×	×	×	×	×
SME2	×	✓	✓	✓	✓	C, E	×
SME3	✓	✓	✓	✓	✓	B, C	×
SME4	✓	✓	✓	✓	✓	C	×
SME5	×	✓	✓	✓	✓	C, E	×
SME6	✓	✓	✓	✓	✓	B	×
SME7	✓	✓	✓	✓	✓	B, D, C	×
SME8	×	✓	✓	✓	✓	A	I
SME9	✓	✓	✓	✓	✓	A	I
SME10	✓	✓	✓	✓	✓	A	L, I
SME11	×	✓	✓	✓	✓	Service provider	×
SME12	✓	✓	✓	✓	✓	B, E	×
SME13	✓	✓ (2)	✓	✓	✓	B, E	×
SME14	×	✓	✓	✓	✓	B	×
SME15	✓	✓	✓	✓	✓	A	I
SME16	×	✓	✓	✓	✓	A	I
SME17	×	✓	✓	✓	✓	A	L, I
SME18	✓	✓	✓	✓	✓	A, C	I
SME19	✓	✓	✓	✓	✓	A	L, I
SME20	✓	✓	✓	✓	✓	B, D, E	×
SME21	✓	✓	✓	✓	✓	B, C, E	×
SME22	×	✓	✓	✓	✓	A	L, I

Source: Developed by the researcher informed by the interview data, fieldwork journal and pictures taken during the field visits.

It is noteworthy that the production of wet blue is regarded the most polluting or contaminating stage of leather production because a number of chemicals are used to remove hair and flesh from raw hides at this stage, and when hides are washed it results in the discharge of poisonous wastewater. Therefore firms which engage with the production of wet blue need to take additional measures to reduce their environmental footprints compared to those firms starting their operations from any of the other stages beyond the production of wet blue. For example, SME 4, SME 13, SME 15 and SME 19 had set up their own effluent treatment plants to treat wastewater before discharging in the main drains (for details, see Section 4.2.1). On the other hand, firms that were operating from the large tannery clusters in Kasur (for example, SME 2 and SME 5) and Karachi (for example, SME 21 and SME 22) and did not have enough resources to set up their own treatment plants were benefiting from the common effluent treatment facilities (for details, see Section 4.2.2). However, every environmentally engaged sample firm had adopted cleaner production processes in one form or the other allowing them to reduce their environmental footprints within the house and also achieve eco-efficiency in their processes (for details, see Sections 4.2.1 and 4.2.2).

The analysis of supply chain positioning of SMEs also revealed that only two firms (SME 1 and SME 13) were selling wet blue. While SME 1 was selling wet blue in the local market, SME 13 was exporting it to the European and Far East regions (Table 3.5). All other firms were processing wet blue to manufacture finished leather. Thus, the supply chain for SME 1 was seen to have ended with the selling of wet blue in the local market. In contrast, all other firms were found to have been engaged with all the stages of producing finished leather somehow (Table 3.5).

Nine of the sample firms were using finished leather to manufacture leather products, and these were SME 8, SME 9, SME 10, SME 15, SME 16, SME 17, SME 18, SME 19 and SME 22 (Table 3.5). While all these firms were selling their leather products in different international markets (for details about their export markets, see Section 4.2.1 and 4.2.2), four of these firms (SME 10, SME 17, SME 17 and SME 22) were also selling in the local market. The supply chain for eight of the sample firms (SME 3, SME 6, SME 7, SME 12, SME 13, SME 14, SME 20 and SME 22) ended with the selling of finished leather to leather product manufacturers in the local market (Table 3.5). On the other hand, seven firms (SME 2, SME 3, SME 4, SME 5, SME 7, SME 18 and SME 21) were selling finished leather to leather product manufacturers in different international markets (Table 3.5). While only two firms (SME 7 and SME 20) were selling finished leather to the leather suppliers who were operating in the local market, six firms (SME 2, SME 5, SME 12, SME 13, SME 20 and SME 21) were seen to have been selling finished leather to the leather suppliers in various international markets (Table 3.5). It is, however, noteworthy that some firms, such as SME 2 and SME 5, were selling finished leather to only international buyers whereas some others, for instance, SME 12 and SME 13, were selling finished leather to both local and international buyers.

The nature of the market in which the sample firms were operating had implications for their environmental engagement. Export-oriented firms, for example, those selling in the European region, were more exposed to the environmental sensitivity of international buyers and accordingly were taking proactive measures to meet the environmental demands of their buyers. In contrast, firms operating locally or in those international markets having a lower level of environmental sensitivity of buyers, such as in the Middle

East region, were not seen to have been driven for environmental improvement by the customers' environmental demands (for detailed discussion, see Chapter 4 and Chapter 5).

***(b) Other study participants***

A number of other industry related stakeholders also participated in this study. As Table 3.6 shows, these include industry associations, such as Pakistan Tanners Association (PTA), Pakistan Gloves Manufacturers and Exporters Association (PGMEA), Tanneries Association, Dingarh, Kasur (TADK), Small Tanneries Association, Kasur (STAK), environmental support institutes, such as Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), public sector organisations, such as Small and Medium Enterprises Development Authority (SMEDA) and Pakistan Council of Scientific and Industrial Research (PCSIR), some public and private sector joint ventures, such as Kasur Tanneries Waste Management Agency (KTWMA) and Common Effluent Treatment Plant, Karachi (CETPK), industry related educational institutes, such as National Institute of Leather Technology (NILT) and Institute of Leather Technology (ILT), and input suppliers, such as chemical companies and cleaner technology sellers.

There are substantial reasons for gathering data from other key stakeholders of the leather industry. This study aims to investigate the interactive effect of multilevel factors (micro-meso-macro) on environmental behaviour of leatherworking SMEs (Section 1.3). While SME owners and managers could have informed about such factors, using different types of respondents and different data sources is helpful in gaining a more comprehensive understanding of the issue being researched and substantiating findings as well (Yin, 2009; Eisenhardt and Graebner, 2007; Stake, 2005; Saunders et al., 2004).



**Table 3.6: Other stakeholders of Pakistan's leather industry interviewed for this study**

Stakeholders	Nature of organisation	City	Person(s) interviewed	No. of interviews
Pakistan Tanners Association (PTA)	National level industrial association	Lahore	Secretary of the association and three members	4
Pakistan Gloves Manufacturers and Exporters Association (PGMEA)	National level industrial association	Sialkot	Chairman of the association and two members	2
Tanneries Association, Dingarh, Kasur (TADK)	Regional industrial association	Kasur	A representative member of the association	1
Small Tanneries Association, Kasur (STAK)	Regional industrial association	Kasur	A representative member of the association	1
Cleaner Production Centre (CPC)	Environment support institute	Sialkot	Project manager	3
Cleaner Production Institute (CPI)	Environment support institute	Lahore and Karachi	Two programme managers	4
Small and Medium Enterprises Development Authority (SMEDA)	A government entity- Ministry of Industries and Production Pakistan	Sialkot	Station officer	4
Kasur Tanneries Waste Management Agency (KTWMA)	A private-public partnership initiative - combined effluent treatment plant for a tannery cluster in Kasur	Kasur	In-charge	2
Common Effluent Treatment Plant, Karachi (CETPK)/ Korangi Wastewater Management Project (KWMP)	A private-public partnership initiative - combined effluent treatment plant for tannery cluster in Karachi	Karachi	Manager administration	1
SGS	Testing laboratory	Lahore	Senior executive officer/ marketing manager	1
National Institute of Leather Technology (NILT)	Industry related educational institute	Karachi	Staff member	1
Institute of Leather Technology (ILT)	Industry related educational institute	Gujranwalla	Principal and ex-principal	2
Pakistan Council for Scientific and Industrial Research (PCSIR)	Research and testing laboratories complex – an institute of national government	Lahore	Two staff members	2
CC1	Chemical supplier	Lahore	Staff member – technical manager	1
CC2	Chemical supplier	Lahore	Staff member – leather technician	1
CC3	Chemical supplier	Lahore and Karachi	Owner-manager	1
CC4	Chemical supplier	Lahore	Staff member	1
CC5	Chemical supplier	Kasur	Owner-manager	1
TS1	Cleaner technology seller - (e.g. solar tubes)	Lahore	Executive staff member	1
				<b>34</b>

Source: Developed by the researcher informed by the interview data, fieldwork journal and photographs taken during field visits.

An important research question of this study is that how leatherworking SMEs in Pakistan become able to reduce their environmental footprints (Section 1.3). Informed by the pilot project undertaken in MRes (Wahga, 2013), the researcher could anticipate SMEs seeking support from their networks, such as environmental support institutes, industry associations and input suppliers, for developing resources and capabilities needed to adopt environmental practices effectively. Exploring the role of external institutional actors in enabling these firms to become environmentally responsible businesses thus substantiates interviewing other stakeholders of the leather industry as well. Finally, having established that the research on sustainability in SMEs is in its infancy, with limited studies from developing countries, in general, and in the context of Pakistan, in particular (Chapter 2), it is not considered prudent limiting the research to SMEs but rather also recruit other institutional actors for examining the research issues at a wider level.

In fact, in the absence of support from the formal institutional structures, cleaner production centres offered the (informal) compensatory institutional arrangements helping leatherworking SMEs to develop eco-literacy skills for adopting cleaner production practices. Moreover, these environmental support institutes also offered the normative institutional pressure compensating for the lacked coercive institutional pressure which formal institutional forces could not offer because of the weaker implementation of national environmental regulations and internal capacity constraints of environmental monitoring bodies (for details see, Sections 1.5 and 5.3.2). Thus, CPC and CPI, while operating as (informal) compensatory institutional structures, appear to have addressed some of the institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) in the Pakistan economy which make it a unique context to investigate.

### 3.3.3 The sampling strategy

Different sampling techniques are available for researchers to choose from. Broadly, these are classified as probability and non-probability sampling techniques.

Probability sampling is generally used for survey-based studies and is suitable for selecting large scale samples for quantitative analysis (Saunders et al., 2004). This sampling technique can be an appropriate choice for quantitative studies aiming to investigate the association between variables by using statistical tools for drawing precise results (Easterby-Smith et al., 2008). The sub-types of probability sampling are: simple random sampling, stratified sampling, systematic random sampling, cluster sampling and multi-stage sampling<sup>10</sup> (Easterby-Smith et al., 2008; Bryman and Bell, 2007; Saunders et al., 2004; Hussey and Hussey, 1997).

On the other hand, non-probability sampling is generally used in qualitative studies – the studies that conduct an in-depth analysis of events and examine the processes underlying a phenomenon by gathering rich information (Saunders et al., 2004). The different forms of non-probability sampling are: convenience or haphazard sampling, quota sampling, purposive or judgmental sampling, snowball sampling and self-selection sampling (Easterby-Smith et al., 2008; Bryman and Bell, 2007; Saunders et al., 2004; Hussey and Hussey, 1997). Summarised in Table 3.7 are the main features of these forms of non-probability sampling.

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<sup>10</sup> The researcher has reviewed these sampling techniques for selecting suitable sampling strategy for this study. However, discussion on each of these types is beyond the scope of this study because these techniques are suitable for quantitative studies whereas this research has adopted the qualitative approach.

**Table 3.7: Non-probability sampling techniques**

<b>Sampling techniques</b>	<b>Main features</b>
Convenience or haphazard sampling	Easily accessible cases are selected.
Quota sampling	Categories of the relevant population are defined and selection of cases continues until a sample of specific size is achieved in each category. It is ensured that each category gets representation according to quota proportions.
Purposive or judgemental sampling	Cases are selected on the basis of established criteria set by a researcher considering that selected sample will help answer research questions in the best possible way.
Snowball sampling	Cases are selected using referrals. One case that meets the criteria for inclusion into a study is selected and later on requested to recommend to some other cases. This technique is quite useful when it is difficult to identify suitable members of a population.
Self-selection sampling	A case, generally an individual, is allowed to identify their desire to take part in a study. Those who self-select, often have feelings or specific opinion about issues under consideration.

Sources: Easterby-Smith et al. (2008), Bryman and Bell (2007), Saunders et al. (2004) and Hussey and Hussey (1997)

This study has benefited from both purposive and snowball sampling strategies. The researcher used a purposive sampling strategy, deciding he wanted to speak to a variety of SMEs of different sizes, in different regions, and of different levels of environmental engagement, as well as wanting to speak to a good range of industry stakeholders, so that he would get as broad and deep a picture as he could. Within this purposive sampling strategy, the researcher drew on snowball sampling in order to gain access to SMEs and other industry stakeholders.

In fact, gaining access to SMEs in Pakistan's leather industry is quite challenging. Generally, entrepreneurs feel afraid of someone unknown visiting their premises. It is mainly because they want to keep a distance from government officials fearing that they would gather

some information about their firm inviting some form of penalty later on. Networking and social ties are very effective tools to reach people in the social and cultural settings in Pakistan. Thus, in the initial stages of fieldwork the researcher adopted a purposive sampling strategy for establishing access to environmentally active SMEs through gatekeepers (the intermediary organisations), and later on pursued a snowball sampling strategy which enabled him to establish access through referrals from SMEs being interviewed. Based on his earlier experience of researching leatherworking SMEs (Wahga, 2013) and fan manufacturing firms (Aftab et al., 2010) in Pakistan, the researcher was confident that such an access strategy would be useful to win confidence of informants who otherwise would be reluctant to expose themselves to him and would hesitate to share valuable information.

At the initial stages of fieldwork, the researcher personally approached the industry associations including Pakistan Tanners Association (PTA) and Pakistan Gloves Manufacturers and Exporters Association (PGMEA) knowing from his pilot project (Wahga, 2013) that they would be the best platform to explore the institutional environment surrounding the leather industry and environmental interventions made by different organisations for environmental capacity building of SMEs. Second, these organisations have been working with leather manufacturing firms for a long time so could better help identify environmentally proactive firms. Initial access to and the participation of some SME owners, managers and environmental support institutes including Kasur Tanneries Waste Management Agency (KTWMA), Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) was gained through these industry associations.

Within Punjab province, PTA and CPI proved helpful for recruiting environmentally active SMEs in Lahore, Sheikhpura, Kasur and Muridkey regions. In the same province, PGMEA and CPC served this purpose in Sialkot region. Similarly, in Sindh province, PTA and CPI helped in establishing access to SMEs in Karachi cluster. These intermediary organisations thus served as gatekeepers assisting the researcher to identify and recruit respondents from those SMEs that were explicit about their environmental engagement and had been attending trainings and workshops with them for their environmental capacity building. As is already noted, in the process the researcher also adopted a snowball sampling strategy i.e. working through intermediary organisations to gain access to some SMEs and then gaining further recommendations from there.

In addition, the researcher also attended an interesting event - Pakistan Mega Leather Show 2015 - arranged by Pakistan Tanner Association (PTA) at Expo Centre Johar Town in Lahore from 6 to 8 March 2015. A large number of tanneries, input suppliers and some research institutes, in addition to the industry related labs, participated in this event. The researcher spent three full days there attending lectures/seminars that were arranged by chemical companies and research labs for informing tanneries about environmentally less harmful chemicals, talked to some cleaner technology suppliers and also interviewed (informally) some SME owner-managers. Attending this event proved much useful for validating the findings of fieldwork and confirming that to a greater extent the saturation point (Bowen, 2008) in information gathering had been achieved. Therefore, after attending this event, the researcher stopped establishing further access to leatherworking SMEs.

### ***Sample size***

There are no hard and fast rules regarding the number of cases and interviews to be used for qualitative analysis (Saunders and Townsend, 2016). A general guideline is, however, to keep probing issues until saturation is achieved (Saunders and Townsend, 2016; Bowen, 2008). Nevertheless, some authors have suggested limits of the sample for qualitative studies. For example, Eisenhardt (1989) recommends choosing between four to ten cases to achieve theoretical saturation. Miles and Huberman (1994) suggest confining a study to fifteen cases in order to keep it manageable. While referring to Morse (1994), Guest et al. (2006) state that approximately thirty five is a reasonable sample size for grounded analysis. Recommendation from Creswell (1998) is to use twenty to thirty interviews for grounded analysis. Kuzel (1992) believes that if the sample is homogeneous then six to eight interviews are reasonable for qualitative analysis otherwise, when probing for disconfirming evidence, twelve to twenty interviews can be a sufficient number. While some of these researchers have suggested the number of cases, others have advised about the number of interviews to be used in a qualitative study. However, even within these suggestions, there is a lack of uniformity. The general principle of achieving saturation point was followed in this study (Saunders and Townsend, 2016; Bowen, 2008), which was assessed to have been achieved after interviewing respondents from 22 SMEs resulting in 35 interviews (Table 3.4), in addition to interviewing 19 other stakeholders of the leather industry resulting in 34 interviews (Table 3.6). Collectively, all these study participants provided sufficient and useful information to investigate environmental drivers, enablers and barriers in leatherworking SMEs.

In terms of geographical limits of the sample, SMEs were selected from the Punjab province (areas include: Lahore, Kasur, Sialkot, Gujranwalla, Sheikhupura and Muridkey) and Sindh

province (areas include: Karachi) (Table 3.4). Other industry stakeholders were also from different cities and regions (Table 3.6), but mainly from Punjab and Sindh provinces. There are some considerable reasons for confining sampling limits to Punjab and Sindh provinces. First, as is noted earlier (Section 1.5), a large number of leather manufacturing units are established in these provinces and therefore they provide a broader perspective of the industry. The main attractions for entrepreneurs establishing their businesses in these areas are the availability and easy access to raw materials and related inputs, in addition to relatively easy approach to customers. Second, these two provinces are leading contributors to overall GDP of the country and therefore have been a point of attraction for environmental interventions to minimize harmful effects of the industrial wastes (Vogt and Hassan, 2011). For example, two combined effluent treatment plants for tanneries are in these areas, one in Kasur (Punjab) and the other one in Karachi (Sindh). Similarly, considering the largest concentration of tanneries in these two provinces environmental support institutes like CPC (Sialkot) and CPI (Lahore and Karachi) have also been more active in these areas. While some leatherworking units are also operating in other provinces of Pakistan (Section 1.5), but due to security reasons in those areas the researcher decided to limit this study to Punjab and Sindh only.

#### **3.3.4 The research methods of this study**

Research method entails the tools and techniques of collecting and analysing data (Blaxter et al., 2011, p. 59; Buchanan and Bryman, 2007; Saunders et al., 2004, p. 2; Hussey and Hussey, 1997, p. 54). This is different from methodology, which is more about overall philosophical underpinnings of the research i.e. how to undertake research (Blaxter et al., 2011, p. 59; Saunders et al., 2004, p. 2).



**(a) *Using semi-structured interviews for collecting data***

The data for qualitative research can be gathered from multiple sources, which can include, but may not be limited to, interviews, documents, archival data, survey data, observations and ethnographies (Yin, 2009; Eisenhardt and Graebner, 2007; Saunders et al., 2004; Hussey and Hussey, 1997). Amongst these sources, interviews are generally considered a better option for gathering rich empirical data (Eisenhardt and Graebner, 2007). Interviews can be conducted in different forms, such as fully-structured interviews, semi-structured interviews, or unstructured interviews (Easterby-Smith et al., 2008; Bryman and Bell, 2007; Saunders et al., 2004; Hussey and Hussey, 1997). How structured an interview should be is determined according to the nature of research problem and philosophical underpinnings of the study. Moreover, the choice of methods may also be influenced by 'a combination of organisational, historical, political, ethical, evidential, and personally significant characteristics of the field of research' (Buchanan and Bryman, 2007, p. 483).

Given the need for research as identified in Chapter 2, this study assumes an ontological view of multiple realities and adopts the qualitative research approach (Section 3.2.1). For uncovering the multiple realities and capturing pertinent issues about environmental behaviour of leatherworking SMEs in Pakistan semi-structured in-depth interviews were used. The other reasons that have informed the purposeful choice of semi-structured interviews for this study are: first, semi-structured interviews are considered useful for gathering rich and valuable data (Punch, 2005) in order to 'gain an understanding from the respondent's perspective which includes not only what their viewpoint is but also why they have this particular viewpoint' (Easterby-Smith et al., 2008, p.144). Second, while the conduct of semi-structured interviews is largely guided by the perceptions of an informant (Saunders et al., 2004, p. 247), researcher can exercise some control over the direction of

discussion by seeking needed clarification about the issues under investigation. To this end, Easterby-Smith et al. (2008, p. 146-147) advise using the 'laddering' technique to dig deeper into the issues. Thus, 'open discovery' is a strength of semi-structured interviews (Hussey and Hussey, 1997, p. 157). Third, being 'conversation-like', semi-structured interviews can keep both the interviewer and interviewee in a relaxing situation (Jennings, 2005). Fourth, semi-structured interviews extend liberty to the researcher of extending and modifying questions as new aspects of investigation are explored based on earlier interviews (Hussey and Hussey, 1997, p. 156). Finally, semi-structured data collection methods are already in use within the research area examining environmental behaviour of SMEs (e.g. Williams and Schaefer, 2013; Williamson et al., 2006).

The above mentioned benefits were drawn upon when operationalising semi-structured interviews during the fieldwork for this study. For example, 'laddering technique' (Easterby-Smith et al., 2008, p. 146-147) enabled the researcher to probe in-depth many issues about the dynamics of environmental behaviour of leatherworking SMEs as they emerged during discussions with informants. By asking open-ended questions, the researcher offered liberty to the informants to share their viewpoints and experiences openly, allowing him to track the processes underpinning the environmental behaviour of SMEs. Different sets of questions were used for interviewing SME owners and managers and representatives of other industry stakeholders (Appendices III and IV). SME focused interviews explored the firm level experiences and processes regarding the isomorphic pressures underpinning sustainability behaviour of firms and the factors enabling and constraining them while addressing the environmental issues. The development of such questions was informed by studies such as Wahga (2013); Williams and Schaefer (2013), Blundel et al. (2013), Hofmann et al. (2012), Brammer et al. (2012), Parry (2012), Revell et

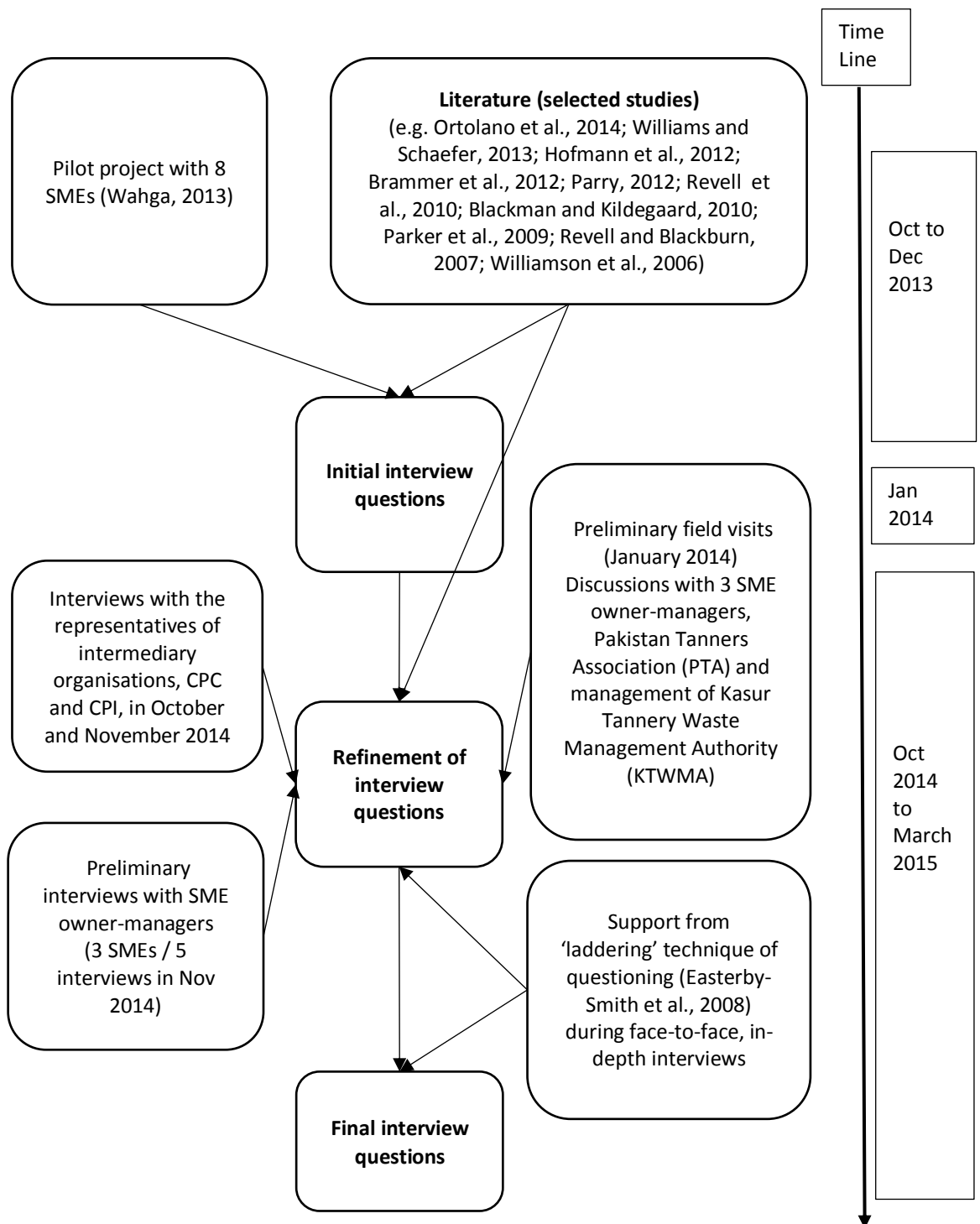
al. (2010), Blackman and Kildegaard (2010), Parker et al. (2009), Revell and Blackburn (2007) and Williamson et al. (2006). Questions for the other industry stakeholders, such as the cleaner production centres, industry associations and input suppliers, revolved around investigating their role in assisting SMEs to become environmentally responsible businesses. Such questions were informed by studies like Ortolano et al. (2014), Klewitz and Hansen (2014), Weltzien Høivik and Shankar (2011), York and Venkataraman (2010) and Battaglia et al. (2010).

Figure 3.2 summarises the development process of interview questions. Initially, the questions were informed by the literature on environmental drivers, enablers and barriers (Chapter 2) and a pilot study undertaken with eight firms during MRes (Wahga, 2013). However, as the researcher got exposed to the contextual realities in the field through preliminary discussions with the representatives of intermediary organisations, such as Pakistan Tanners Association (PTA), Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), and first few exploratory visits to SMEs made in January 2014 and later on in October and November 2014, he refined the interview protocols<sup>11</sup>.

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<sup>11</sup> Mainly data were collected between October 2014 and March 2015, while some exploratory preliminary field visits made in January 2014 also developed an understanding about the institutional environment in which leatherworking SMEs were operating in Pakistan.

**Figure 3.2: Development process of interview questions**



Source: Developed by the researcher.

Moreover, using the 'laddering technique' (Easterby-Smith et al., 2008), the researcher was able to probe a number of issues during the face-to-face, in-depth interviews throughout the fieldwork. The laddering technique allowed the researcher to raise those questions which were not a part of the already developed semi-structured list of questions and emerged from the discussions with various respondents. Thus, by using the 'why' questions and asking for the additional evidence and examples about the issues under discussion, the researcher managed to gather valuable insights from the study participants.

Being cognizant of the dangers of self-reporting bias, the researcher considered it essential to gather data from multiple sources. The main objective behind adopting this approach was to establish trustworthiness and authenticity in findings of the study (Symon and Cassell, 2012; Tracy, 2010; Easterby-Smith et al., 2008; Schwandt et al., 2007; Krefting, 1991; Lincoln and Guba, 1985). All the interviews with SME owners and managers were conducted face-to-face on the premises, which enabled the researcher to record observations in fieldwork journal (Appendix-XII) and also gather visual data which consisted of taking photographs (Appendix-XIII) of their production facilities. Similarly, face-to-face interviews were conducted with respondents from intermediary organisations on their premises which gave the researcher an opportunity to collect some reports and brochures containing information about the environmental support programmes of these organisations. Only the input suppliers were interviewed away from their premises while attending the Pakistan Mega Leather Show 2015 in Lahore, but the researcher had a chance to have a look at their products and testing facilities they had displayed on their stalls and were offering to leatherworking units.

While researching SMEs, a single experienced and better-qualified informant can help capture a firm's business practices because decision making is highly centralised therefore interviewing several respondents is not often considered necessary (Torugsa et al., 2013; Lyon et al., 2000). In this study, the respondents from SMEs were generally their owner-managers. While in most cases both owner-managers and production managers participated in the study, exception were three cases, SME 2, SME 4 and SME 18, where due to the non-availability of owner-managers only managers were interviewed.

The average length of an interview was approximately 55 minutes, with a minimum duration of 29 minutes and the maximum length of 2 hours and 16 minutes. Depending on the need for further probing and explanation required for some issues, almost 50 percent of the sampled SME owners and managers were interviewed twice. Most of the time follow up interviews were conducted on the same day. With the consent of informants, interviews were digitally recorded, except in two cases when owner-managers were not comfortable with recording and notes were taken during the interview to record discussion.

However, building on the experience gained during the pilot project (Wahga, 2013), the researcher found it useful to keep taking notes even in those cases where interviews were digitally recorded. In fact, through note taking activity, 'fieldwork journal' (Hammersley and Atkinson, 2007, p. 151) or what Saunders et al. (2004, p. 388) call a 'researcher's diary' was developed. Reflections on the fieldwork were also added to this journal. It, therefore, not only served as a running account of the conduct of this research but also effectively informed both the transcription and analysis phases of the study by serving as a basic analysis of interviews and observations (Hammersley and Atkinson, 2007, p. 150-152).

The researcher was vigilant of the fact that it was not sufficient to gather rich information, robust data analysis was equally important (Blaxter et al., 2011, p. 179-180). Therefore, due consideration was given to practical limits of the amount of data and every effort was made to gather focused and relevant information.

### ***Practical challenges of the fieldwork***

One of the major challenges faced during the fieldwork was that despite having established access to gatekeepers, such as industry associations, approaching SME owner-managers was not easy. For example, although PTA had sent out emails (Appendix-V) to its members attaching project description regarding this study (Appendix-VI) and introducing the researcher to them, but when approached many SME owner-managers refused to participate in the study. Moreover, there were many SMEs that were not members of PTA and were operating locally. For approaching them, the researcher had to pay repeated visits to tannery clusters, sometimes succeeding in gaining access but often facing denial. Data collection also proved challenging at times due to the interruptions of Eid festival, bad weather not allowing to travel, oil crises in the country making travelling impossible and terrorist attacks in the northern areas disturbing life across the country. However, the researcher remained consistent in contacting SMEs through emails (Appendix-VII) and making phone calls scheduling interviews according to the time that best suited them, until saturation point was achieved in data collection.

Since interviews were conducted within the premises of SMEs, in some cases discussions were disrupted by sudden engagements of respondents. Where SMEs were in proximity, such as in Kasur and Sialkot regions, often informants were paid sudden visits by their peers who kept sitting while the researcher was conducting interviews. In such situations, it was

observed that informants were not comfortable in answering some of the questions. So, it was preferred to stop interviewing and recording them while guiding the discussion towards general socio-economic, political and security situation in the country and their implications for the leather industry. This strategy proved very helpful because when their peers left, the researcher got the chance to probe issues openly. Although the presence of peers created problems, it also proved fruitful. Following informants' introducing the researcher to their peers, they were requested to participate in the study. Though all such requests were not entertained, the researcher managed to establish access to some SMEs following this opportunistic approach (Buchanan et al., 1988).

As is noted earlier, with the consent of informants, interviews were digitally recorded. However, in two cases, respondents refused to be recorded. Complying with ethical principles (Section 3.4), in such instances notes were taken during the interviews. At the same time, as the researcher was also taking photographs (Appendix-XIII) of their production facilities for countering potential emergence of social desirability bias (Roxas and Lindsay, 2012; Williamson et al., 2006) and enhancing validity and reliability of findings (Symon and Cassell, 2012; Tracy, 2010; Easterby-Smith et al., 2008, p. 109; Pratt, 2008; Schwandt et al., 2007; Lincoln and Guba, 1985), wherever it was not allowed to take snaps the researcher did not push the informants to permit and preferred to record observations in the 'fieldwork journal' (Hammersley and Atkinson, 2007, p. 151).

In order to establish a relationship on sound grounds, 'co-operation and trust' play an important role (Easterby-Smith et al., 2008, p. 130). For winning the trust of informants, they were given assurance for keeping them anonymous and using information related to them only for academic purposes. In this regard, in addition to verbal assurance, project



information sheet and consent seeking document were used effectively (Appendix-VI). In addition, informants were also asked if they thought some information was too confidential to be revealed. However, this issue was not faced because after having established trust during introduction respondents became confident that the researcher was going to use data only for research purposes while ensuring their anonymity.

Generally, interviews were conducted in the local language (Urdu) so that respondents could properly understand the context of questions. There could be a danger that when transcribing in English information might lose meaning or context. Since the researcher is fluent in both Urdu and English languages, he translated the interviews into English for analytical purposes. However, the accuracy of some of these translations was checked by an academic in Lahore who had a good understanding of both languages ensuring that the meaning and context of interview responses were intact.

In order to ensure that the gathered information was kept safe, field notes were photocopied and kept as backup records. Digital copies of recorded interviews were saved in an additional device, in case the original interview files got corrupted or were lost. To ensure confidentiality, all digital devices were kept password protected.

#### ***(b) Collecting data from secondary sources***

In addition to face-to-face, in-depth interviews, some data from secondary sources were also gathered. These sources include reports on environmental dynamics of leather industry produced by the Pakistan Tanners Association (PTA), Cleaner Production Institute (CPI), Cleaner Production Centre (CPC), Pakistan Gloves Manufacturers and Exporters Association (PGMEA), Small and Medium Enterprises Development Authority (SMEDA),

United Nations Industrial Development Organisation (UNIDO) and European Commission (EC), in addition to some project briefs on combined effluent treatment plants from Kasur Tanneries Waste Management Agency (KTWMA) and Common Effluent Treatment Plant, Karachi. Some documents in the form of brochures were also gathered from input suppliers such as chemical companies and cleaner technology producers. Where available, websites of sample SMEs and other stakeholders of the industry were also explored. The rationale for gathering secondary data was adding to the richness of information gathered through semi-structured interviews and additional depth to the analysis (Easterby-Smith et al., 2008). In fact, these secondary sources of data were found much helpful for understanding the institutional environment surrounding Pakistan's leather industry and to an extent for validating findings emanating from analysis of interview data. For example, from the reports of PGMEA, the researcher could revisit the depth of cleaner production interventions made by CPC and how SMEs benefited from those. It is, however, noteworthy that this study mainly drew on interview data and secondary sources supported the analysis stage.

The next section of this chapter elaborates the systematic approach adopted for analysing interview data.

### ***(c) Methods of analysing the data***

There is no single best way of analysing qualitative data. This study is thus informed by broader literature on the principles of qualitative data analysis (Gioia et al., 2013; Tracy, 2010; Corbin and Strauss, 2008; Easterby-Smith et al., 2008; Williamson et al., 2006; Thomas, 2006; Braun and Clarke, 2006; Punch, 2005; Hussey and Hussey, 1997; Miles and Huberman, 1994; Glaser and Strauss, 1967). It, however, mainly draws on grounded

analysis (Easterby-Smith et al., 2008, p. 175-180), coupled with the general principles of thematic analysis (Braun and Clarke, 2006; Punch, 2005; Miles and Huberman, 1994) and the Gioia methodology (Gioia et al., 2013) for developing a systematic method for analysing data. Such an approach to data analysis was considered appropriate for achieving the aim to let the 'data speak for itself' (Easterby-Smith et al., 2008, p. 173) and adopting a 'systematic inductive approach to concept development' (Gioia et al., 2013, p. 16). This allowed the discovery of grounded concepts rather than imposing existing concepts to data. This approach to data analysis is thus consistent with the basic assumption of social constructionist paradigm, the philosophy that underpins this study, i.e. to explore the experiences of informants and the underlying processes that inform their experiences (Section 3.2).

While thematic analysis provides the core skills needed for conducting different forms of qualitative analysis (Braun and Clarke, 2006), based on their experience, Easterby-Smith et al. (2008) have provided a comprehensive systematic procedure to follow for undertaking grounded analysis, which in this study is further strengthened by integrating the systematic inductive approach to concept development as proposed by Gioia et al. (2013). The purpose of adopting this approach has been to achieve rigor and credibility for findings and analysis (Tracy, 2010; Pratt, 2008; Lincoln and Guba, 1985).

It is noteworthy that grounded analysis as applied in this study is not grounded theory in its strict sense as was presented by Glaser and Strauss (1967) in their seminal work. According to the seminal theorists of grounded theory, researchers should first collect and analyse data and then perform literature review in order to avoid the influence of previous findings and research approaches on their study (Charmaz, 2006; Suddaby, 2006; Saunders

et al., 2004). However, it seems impractical for research students, like me, who need familiarisation with the extant literature not only to identify empirical and theoretical gaps but also to rationalise their choice of methodology, in addition to being constrained by time and resources. The inductive approach to concept development (Gioia et al., 2013) has, however, allowed the researcher to achieve the objective of developing grounded concepts to a greater extent instead of affirming existing concepts.

While operationalising grounded analysis 'structure is derived from the data rather than imposed on the data externally' and 'data is systematically analysed so as to tease out themes, patterns and categories' for making a theoretical contribution (Easterby-Smith et al., 2008, p. 175). It is an iterative approach where the data collection and analysis go hand in hand as the research progresses (Punch, 2005). Gioia et al. (2013, p. 20-21) argue that following their methodology a researcher can give voice to the informants both at the data analysis stage and while reporting findings through the discovery of new concepts by building 'data structure'. While highlighting the importance of 'data structure' for showing the in-depth embeddedness of informants' view in living the phenomenon under investigation, they even go to the extent of saying: 'No data structure; know nothing' (Gioia et al., 2013, p. 21). It is noteworthy, however, that the 'data structure' does not capture the relationship between identified concepts, but rather shows how a concept has been developed from data (Gioia et al., 2013, p. 20). In the process, what follows would be an exploration of the interplay between identified concepts and themes in relation to relevant theoretical and empirical literature. It provides an opportunity to a researcher to confirm or disconfirm arguments made in the prior literature and appreciate the value of grounded concepts. At this stage, a researcher departs from 'inductive' approach and enters into the

domain of establishing 'abductive' reasoning to data analysis (Dubois and Gadde, 2014; Gioia et al., 2013; Alvesson and Kärreman, 2007; Dubois and Gadde, 2002).

The following discussion is about how grounded analysis has been operationalised in this study. In this regard, Table 3.8 summarises the different phases of data analysis (left-hand column) and related activities (right-hand column).

Instead of waiting for the fieldwork to be over, the researcher started to transcribe the interviews alongside fieldwork activities. While one purpose of this activity was to add newly explored questions to interview protocol ensuring that key issues were not left unexplored in the following interviews, the other key objective was to start reviewing data to make better sense of the emerging story. This also helped in determining if there was a need to arrange a follow-up interview with the informants.

Alongside, an NVivo project, 'Environmental sustainability in Pakistan's leatherworking SMEs' was developed (Appendix-VIII). The researcher was, however, vigilant that while Computer Assisted Qualitative Data Analysis (CAQDAS) was a useful means to manage a larger set of data for undertaking systematic analysis, reflective and iterative in-depth analysis had to be carried out by him. CAQDAS was thus mainly used for coding, storing, managing and retrieving data. This offered flexibility to the researcher to review data, undertake re-coding and rearrange themes as deemed appropriate (Saunders et al., 2004, p. 402-406).

**Table 3.8: Phases of data analysis**

Phases	Description of Process
Phase I Familiarisation with data and development of reflection	Interviews were transcribed into word documents. Transcriptions were read and re-read, with the aims of checking for mistakes and getting familiarised with the data. Interview transcripts were imported into an NVIVO project – Environmental sustainability in Pakistan’s leatherworking SMEs. Following Miles and Huberman (1994), while re-reading transcripts, marginal notes were taken to identify initial ideas emerging from the data. In fact, this step was facilitated by the recording of memos in NVIVO. Following Easterby-Smith et al. (2008), field notes / ‘fieldwork journal’ was reviewed alongside re-reading the transcripts to develop reflections on the emerging story.
Phase II Generating first order themes	Following Gioia et al. (2013), initial concepts were drawn from transcripts staying conscientiously close to the views of informants by using the terms they had used, allowing to develop an understanding of their lived experiences.
Phase III Cataloguing first order themes for searching second order themes	Similar concepts were catalogued for teasing out themes. In the process, concepts were also reviewed and where needed re-arranged in catalogues based on similarities and differences in concepts as identified. Following Gioia et al. (2013) and Easterby-Smith et al. (2008), at this stage, I started to use personal terminologies (academic labels to concepts) allowing to keep track of activities in a more understandable manner, closer to the research questions.
Phase IV Re-coding and reviewing themes	Concepts and themes were reviewed, and where deemed appropriate were re-arranged, both at the extract level and across data set, clarifying contradictions and evaluating that the identified theme represented what the informant had said.
Phase V Defining, naming and linking themes	On-going analysis to refine themes to develop aggregate dimensions/constructs/theoretical codes, and develop ‘data structure’ following Gioia et al. (2013). Informed by theoretical and empirical literature, identified themes were linked developing theoretical structures to inform overall story and draft findings. The initial findings were shared with supervisors for feedback. I also presented initial findings in a couple of departmental seminars and annual Open University PhD days, in addition to ESRC seminars series on green innovation 2015, inviting useful comments for analysis.
Phase VI Re-evaluation and report writing	Based on feedback, while reviewing themes analysis was revisited and interpretations were developed to report in the thesis. Relevant extracts were selected, relating back to research questions and literature to produce a scholarly analysis.

Sources: Gioia et al. (2013), Easterby-Smith et al. (2008), Braun and Clarke (2006), Punch (2005), Saunders et al. (2004), Hussey and Hussey (1997) and Miles and Huberman (1994)

While reading and re-reading the interview transcripts, following Miles and Huberman (1994) who have advised to take marginal notes on transcripts, memos cataloguing initial thoughts about the interview data were developed in NVivo (Blaxter et al., 2011, p. 219-222 ). In the process, the 'fieldwork journal' was constantly revisited (Easterby-Smith et al., 2008; Hammersley and Atkinson, 2007, p. 151). This allowed the researcher to effectively reflect upon his field-based observations while analysing data. The preliminary data analysis thus started while getting familiarised with the data and understanding emerging story.

Phase II focused on developing first order themes, what Gioia et al. (2013) call first order terms or initial concepts and for Corbin and Strauss (2008) it is open coding. At this stage, the researcher conscientiously kept himself closer to the lived experiences of informants by using almost similar terms to label nodes as they had used.

In phase III of data analysis, following Gioia et al. (2013), Easterby-Smith et al. (2008) and a number of other authors advising on thematic analysis (e.g. Braun and Clarke, 2006; Punch, 2005; Miles and Huberman, 1994), first order themes were catalogued by observing similarities and differences between them. This led to the development of second order themes, what Corbin and Strauss (2008) call axial coding. At this stage, it was preferred to use academic terminologies over the terms used by the informants so that now a theoretic structure could be given to the data.

First order and second order themes were reviewed in phase IV. This iterative process of data analysis not only resulted in relabelling some themes but also in rearranging some of them across categories, ensuring consistency between the views of informants and nodes as labelled. For example, 'D' was added to all the nodes representing environmental

drivers. Similarly, while categorising environmental barriers as external and internal, 'E' was added to the nodes representing external barriers and 'I' was added to the nodes representing internal barriers. Following the same strategy, enabling factors of environmental improvement in SMEs were grouped. For example, 'PR' was added to the nodes capturing firms' ability to change their physical resource base. Likewise, 'P' was added to the nodes representing SMEs' ability to change their processes for adopting cleaner production. At the same time, 'MF' was added to the nodes capturing evidence about the microfoundations underpinning enabling factors of environmental improvement. For an illustration, see Appendix-VIII. In the process, data were not only analysed within cases but also across cases. To achieve the objectives of this study, the researcher thus started abstracting instances of significant importance (Blaxter et al., 2011, p. 219-222).

Phase V of data analysis focused on developing 'aggregated dimensions' by collating second order themes representing similar concepts and constructs (Gioia et al., 2013). Now nodes were labelled theoretically, as they were to be reported in the thesis. At this stage, the sets of first and second order themes needed to build 'data structure' had been developed (Gioia et al., 2013), not only because these were needed to inform the findings and analysis but also to display validity and rigor of the research design adopted and establishing the credibility and trustworthiness of research findings (Symon and Cassell, 2012; Bluhm et al., 2011; Tracy, 2010; Pratt, 2008; Easterby-Smith et al., 2008, p. 96 and 109; Schwandt et al., 2007; Lee, 1999, p. 163-168; Krefting, 1991).

In the process, identified constructs were collated according to the research objectives of the study. For examples, themes informing environmental drivers were catalogued in a



parent node labelled as 'Drivers of environmental improvement', and similarly themes capturing the role of environmental support institutes in the environmental capacity building of leatherworking SMEs were aggregated under a parent node 'The role of support institutes' (Appendix-VIII).

To show the richness of data in codes, a full code capturing evidence on the environmental demands from international customers, which are seen to have been one of the leading drivers of environmental improvement in export-oriented environmentally progressive and moderate SMEs (Section 5.3.1), is presented in Appendix-IX. This node was labelled as 'consumer requirements/satisfaction' in the NVivo project (Appendix-VIII). Similarly, to highlight the contribution of cases to the richness of findings, all the codes from SME 7 with the associated evidence are also presented as an illustration in Appendix-X. Overall, in alignment with the study objectives, these codes capture the evidence from SME 7 regarding the environmental practices, drivers, enablers and barriers in this firm.

In fact, now the researcher was moving away from inductive data analysis approach to abductive reasoning (Dubois and Gadde, 2014; Alvesson and Kärreman, 2007; Dubois and Gadde, 2002), and was therefore viewing data through the hybrid theoretical lens (institutional theory, RBV, NRBV and DCs) in addition to the general literature on sustainability in SMEs (Chapter 2). Themes were thus labelled in theoretical terms. This method of data analysis has hence allowed 'the tandem reporting of both voices -informant and researcher-', while also enabling the latter to demonstrate qualitative rigor between the data and the grounded concepts and constructs (Gioia et al., 2013, p. 18).

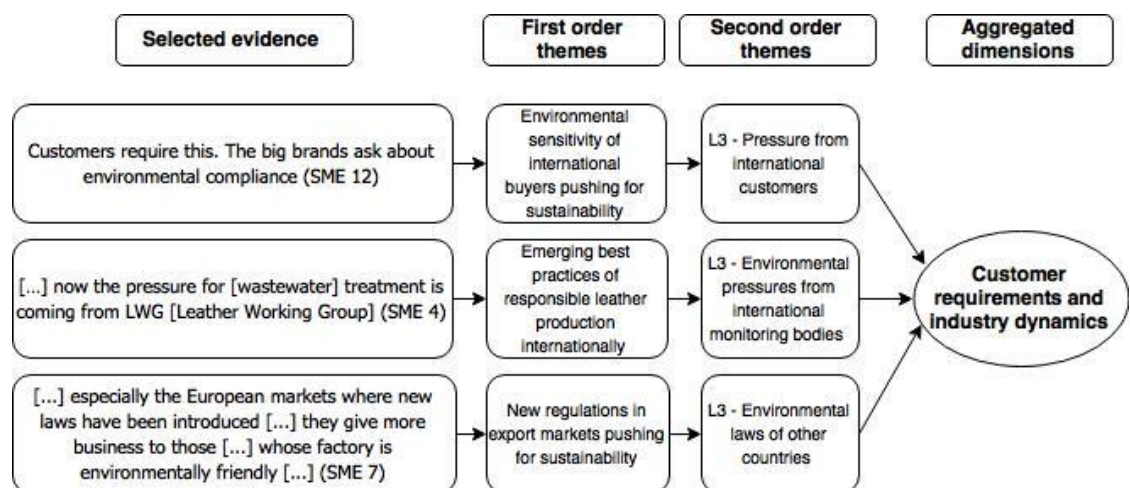
Finally, in phase VI, after reviewing the identified themes in light of the feedback received from supervisors and other senior academics in different events, the process of drafting

findings and analysis started. The data structures for informing findings were finalised, aggregating and/or disaggregating some themes in accordance with the emerging analysis and story. Below an illustration of the data structure is presented.

### ***Illustrating the systematic coding format and data structure***

Figure 3.3 illustrates the systematic approach adopted in this study for developing first order and second order themes from interview data and then later on aggregating those for theoretic discussion. As is already discussed, Gioia et al. (2013) call presenting of the inductive approach to the concept and construct development in such a way as ‘data structure’. It is noteworthy that ‘data structure’ does not necessarily illustrate the relationship between identified themes. It is rather more of a presentation of how themes are developed. Informed by the identified themes, a researcher, later on, develops analytical discussion while exploring theoretical linkages between the themes (Gioia et al., 2013, p. 20-21).

**Figure 3.3: An illustration of data structure**



Source: Developed by the researcher.

As an example, the 'data structure' presented in Figure 3.3 partly informs the research question (Section 1.3) of this study i.e. examining the multilevel factors (micro-meso-macro) that exert isomorphic pressures on leatherworking SMEs to behave environmentally responsibly. For systematic coding, micro level factors were labelled as L1, meso level as L2 and macro level as L3. The aggregated dimension, customer requirements and industry dynamics, derived from the inductive analysis of data captures the interactive processes of different macro (L3) level factors that underpin the international orientation and experience of SMEs. Evidence suggests that the environmental sensitivity of international customers coupled with the environmental regulations of foreign countries, developments in environmental best practices and new industry standards simultaneously push SMEs in Pakistan's leather industry to adopt environmentally sustainable practices. When framed in theoretical terms, this theme refers to coercive isomorphism (DiMaggio and Powell, 1983) driving leatherworking SMEs to become environmentally responsible businesses. However, in this example, coercion is led by the international factors and not by domestic factors. The example shows the limits of 'data structure' in that theoretical discussion follows once 'data structure' is built, highlighting the importance of reflective thinking of the researcher for reporting findings and discussion with theoretical abstraction. Thus, discussion on findings in the remaining chapters of this thesis is informed by such data structures, while the reflective thinking of the researcher allows achieving theoretical abstraction.

### **3.4 Ethical considerations of the study**

There are a number of ethical issues that require due attention in any research. General ethical guidelines for social science researchers include: 'not harming the participants,

gaining informed consent, protecting anonymity, respecting dignity, protecting privacy, ensuring confidentiality, avoiding deception, honesty and transparency in communication, declaring possible conflicts of interests, and avoiding misleading and false reporting of results' (Easterby-Smith et al., 2008, p. 134). Many others, such as Blaxter et al. (2011, p. 160-169), Hammersley and Atkinson (2007, p. 209-229) and Saunders et al. (2004, p. 129-142), have also proposed almost similar ethical principles for researchers to adhere to.

In this study, no vulnerable informants were to be approached for data collection. Therefore no significant ethical issues arise during the fieldwork, but gaining informed consent. This was gained by communicating the purpose of research, giving assurance for using the information only for academic purposes and reassuring informants that the study would not bring any harm to them (Appendix-VI). Moreover, ethical parameters as outlined in the Open University's 'Ethics Principles for Research Involving Human Participants'<sup>12</sup> were observed. In this regard, ethical approval was also sought from the Open University Human Research Ethics Committee (Appendix-XI). However, need for gaining ethical approval from any authorities within Pakistan did not arise.

Regarding communicating findings honestly, the concept of 'data structure' (Gioia et al., 2013) has been operationalised effectively confirming that the findings of this study are surely rooted in data gathered from study participants. As agreed with the study participants, data has been used purely for academic purposes. The dissemination of data has happened in the form of this thesis, submission of a couple of journal articles, such as to International Journal of Entrepreneurial Behaviour and Research (IJEER), and presentations made on academic forums such as ESRC seminars series on green innovation

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<sup>12</sup><http://www.open.ac.uk/research/main/sites/www.open.ac.uk.research.main/files/files/OU%20Ethics%20Principles%20for%20Research%20Involving%20Human%20Participant.pdf>

2015. Moreover, the use of 'soft language', avoidance from 'threatening language'<sup>13</sup> (Buchanan et al., 1988) and considering the cultural aspects of Pakistan dressing up informally so that the researcher didn't look like a tax officer, from whom SME owner-managers generally try to remain at a distance, also served as useful strategies for remaining congenial to study participants.

### **3.5 Chapter summary**

In summary, this chapter has discussed the methodological considerations of this study. The study is rooted in the social constructionist philosophical tradition but at a 'mild' level, and a qualitative research approach supported by multiple-case study research design is considered appropriate for it. Considering the socio-cultural environment of Pakistan, purposive and snowball sampling strategies have been used to recruit informants. Semi-structured interviews have been used for probing issues in-depth, drawing on 'laddering technique' (Easterby-Smith et al., 2008). The chapter has also demonstrated that for analysing data, grounded analysis coupled with inductive approach to concept development (Gioia et al., 2013) has been operationalised allowing the researcher to achieve trustworthiness, rigor and validity in findings and analysis of this qualitative study (Symon and Cassell, 2012; Tracy, 2010; Pratt, 2008; Easterby-Smith et al., 2008; Schwandt et al., 2007; Krefting, 1991; Lincoln and Guba, 1985). The practical challenges faced and strategies adopted to address these have been discussed as well. Finally, reflections have been made on ethical aspects of the study.

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<sup>13</sup> Buchanan et al., (1988) have proposed that the use of words like; 'research', 'interview' and 'publish' should be avoided. Less threatening wording will be more appropriate, for example, I want to 'learn from your experience', I want to have a 'conversation' with you, and I want to 'write an account'.

The next four chapters report on findings of this research.

Chapter 4 presents the within-case and cross-case analysis of the environmental behaviour of sample firms and classifies them into three categories: (a) environmentally progressive, (b) environmentally moderate and (c) environmentally distanced SMEs. This classification of firms then informs the analysis and discussion in the remainder of this thesis. While Chapter 5 examines environmental drivers and Chapter 6 investigates enabling factors of environmental improvement in environmentally progressive and moderate SMEs, Chapter 7 looks into environmental barriers in these two categories of firms. It is noteworthy that these three chapters do not focus on environmentally distanced SMEs because these firms are not environmentally driven and do not advance the resources and capabilities needed for environmental improvement. The reasons for them to have remained environmental distanced are discussed at length in Chapter 4 (Section 4.2.3).

## **Chapter 4 Within-case and cross-case analysis of leatherworking SMEs in Pakistan**

### **4.1 Introduction**

The previous chapter presented the methodological approach adopted in this study. This chapter reports on findings about the environmental behaviour of leatherworking SMEs in Pakistan. It draws on the within-case and cross-case analysis (Section 3.3.2) for offering an in-depth understanding of the environmental initiatives and behaviour of sample firms. Having analysed the nature and scale of and the similarities and variations in environmental actions of the sample firms, these are classified into three categories: (a) environmentally progressive, (b) environmentally moderate and (c) environmentally distanced SMEs (Table 4.1). This categorisation of SMEs informs the analysis and discussion in the remainder of this thesis. Environmentally progressive SMEs display a higher level of environmental commitment. They proactively acquire ecological knowledge, innovate their production processes and adopt advanced cleaner technologies. Environmentally moderate SMEs also display a higher level of environmental commitment and proactively adopt various cleaner production practices. However, they struggle to achieve the similar level of environmental improvement as their environmentally progressive counterparts do. This is largely due to resource scarcity, which constrains these firms, for instance, from acquiring and diffusing the latest cleaner technologies. In contrast to both these categories, environmentally distanced SMEs display a lower level of environmental commitment and do not proactively take environmental protection measures. This is not only due to their internal capacity constraints and a stronger focus on economic imperatives, but also because of the limited interest of their owner-managers in addressing environmental issues.

**Table 4.1: Three categories of sample firms as per their environmental behaviour**

Key features	Environmentally progressive SMEs	Environmentally moderate SMEs	Environmentally distanced SMEs
<b>Environmental orientation of owner-managers</b>	SME owners and managers regard environmental issues as serious and pro-actively take considerable measures to address these issues.	SME owners and managers regard environmental issues as serious and proactively adopt cleaner production practices. They, however, cannot take all the required measures mainly because of the financial constraints.	SME owners and managers concentrate only on economic imperatives. They do not regard environmental issues as serious and/or are least interested in addressing these.
<b>Markets of operation</b>	Only export-oriented or predominantly export-oriented firms.	Some firms only export and some operate in domestic market only. However, some operate both in domestic and international markets.	Predominantly, these firms operate in the domestic market, with some of these also having partial export concerns. Those who export they do not sell to environmentally sensitive customers.
<b>Environmental learning</b>	Strongly embedded in ecological learning networks (locally as well as internationally) and regularly advance ecological knowledge resources through knowledge exploitation and exploration processes.	Embedded in ecological learning networks (generally locally), but do not acquire ecological knowledge as regularly as environmentally progressive SMEs do. Do not engage or get limitedly engaged with knowledge exploration initiatives.	Do not embed in ecological learning networks.
<b>In-house R&amp;D arrangements</b>	Formal R&D arrangements for sustainability-oriented process innovations.	Generally, less formal R&D arrangements for sustainability-oriented process innovations. Often rely on external partners' support for this.	No R&D arrangements for sustainability-oriented process innovations.
<b>Developing eco-literacy amongst human resources</b>	Proactively advance 'eco-literacy' amongst labour-force - both at the internal level as well as with the support from intermediary organisations.	Regular environmental training of labour-force, but mainly with the help of intermediary organisations, and only limited internal arrangements.	No environmental training of employees.
<b>Adoption of cleaner technologies</b>	Proactively invest in (expensive) advanced cleaner technologies.	Proactively adopt cleaner technologies but these are not much advanced/expensive.	Do not adopt cleaner technologies. However, they have access to the combined effluent treatment plants because they are situated in larger tannery clusters which provide this common facility.
<b>Demographic features</b>	Medium sized firms. Labour-force: > 150 but < 250	Mostly medium sized firms. Few are also of small size. Labour-force: generally <150	Generally, these are smaller size firms, with few exceptions operating as medium sized units. Labour-force: generally <20

Source: Developed by the researcher informed by the interview data, fieldwork journal and photographs of field visits.



The remainder of this chapter is structured in two sections. Section 4.2 starts with presenting a summary of each sample firm's environmental initiatives, which form the basis for classifying the firms as environmentally progressive, moderate and distanced SMEs. The three subsections of this section (subsections 4.2.1, 4.2.2 and 4.2.3), drawing on the key evidence from interview data, then present within-case and cross-case findings about the environmental practices of sample firms in each category respectively. Finally, the chapter concludes with a summary in Section 4.3.

## **4.2 Environmental practices of sample firms**

Table 4.2 summarises the environmental actions of sample firms in each of the three categories; namely environmentally progressive, moderate and distanced SMEs. The evidence about environmental practices of these firms was largely emergent, gathered through using semi-structured, open-ended questions and the 'laddering' technique of probing issues (Easterby-Smith et al., 2008, p. 146-147; Saunders et al., 2004). This enabled the researcher to dig deep into the nature, scale and effectiveness of environmental initiatives of each firm. Moreover, further evidence about environmental actions of sample firms was also drawn from the information recorded in the fieldwork journal (Appendix-XII) and gathered through the visual data - photographs of field visits (Appendix-XIII). The triangulation of data sources was considered prudent for addressing the issues of social desirability bias (Roxas and Lindsay, 2012; Williamson et al., 2006) and identifying any 'value-action' gaps (Revell et al., 2010; Schaper, 2002; Tilley, 1999) in that whatever the respondents claimed about their environmental commitment was also pragmatically translated into the environmental engagement in their firms. It also helped in achieving the

validity and reliability in findings (Symon and Cassell, 2012; Tracy, 2010; Easterby-Smith et al., 2008; Pratt, 2008; Schwandt et al., 2007; Lincoln and Guba, 1985).

In Table 4.2, below, a box marked with '✓' means that a firm takes the corresponding environmental measure proactively. A box marked with '×' implies that a firm does not take the corresponding environmental initiative proactively. And any box left as blank represents that there was no evidence from the interview data, fieldwork journal and visual data regarding the corresponding environmental initiative of a firm.

Eighteen of the sample firms were environmentally engaged (SME 2, SME 4, SME 5, SME 6, SME 7, SME 8, SME 9, SME 10, SME 11, SME 12, SME 13, SME 14, SME 15, SME 16, SME 17, SME 18, SME 19 and SME 20) (Table 4.2) and four of these were environmentally disengaged (SME 1, SME 2, SME 21 and SME 22) (Table 4.2).

While environmentally engaged SMEs were proactively taking measures to reduce their environmental footprints, environmentally disengaged SMEs distanced themselves from these measures due to a number of issues such as their internal capacity constraints, not serving the environmentally sensitive buyers and owner-managers becoming acclimatised with the polluted environment (Section 4.2.3). Certain environmental measures of environmentally disengaged SMEs, such as the water conservation practices and trimming of hides (Table 4.2), were largely driven by the economic imperatives and (informal) compliance with the requirements of operating in a tannery cluster.

**Table 4.2: Summary of environmental initiatives of sample leatherworking SMEs**

Environmental initiatives	Environmentally Progressive SMEs				Environmentally Moderate SMEs														Environmentally Distanced SMEs			
	4	13	15	19	2	5	6	7	8	9	10	11	12	14	16	17	18	20	1	3	21	22
Water conservation practices – using measured water and closed door washing	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	×	×	×	×
Trimming of skins/hides before tanning to conserve chemicals	✓	✓	✓	✓			✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	×	×	×	×
Collaborating with intermediary organisations for environmental learning	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Responsible disposal of solid waste – selling smaller pieces of leather to by-product producers	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Product testing to determine its harmful effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Using better quality and less harmful chemicals	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓				
Using recycled inputs	✓	✓	✓	✓	✓	✓	✓				✓		✓	✓	✓		✓	✓				
Collaborating with input suppliers for environmental learning	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓			✓	✓			✓				
Using energy efficient machines	✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓						
Using dust collectors to control air pollution	✓	✓	✓	✓			✓	✓	✓	✓		✓	✓	✓		✓	✓					
R&D for process innovation – aimed at controlling pollution load as well as conserving inputs	✓	✓	✓	✓	✓	✓	✓	✓	✓						✓	✓		✓				
Solid waste control using screens	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓				✓				
Environmental training of labour force	✓	✓	✓	✓	✓	✓			✓	✓		✓			✓		✓	✓				
Environmental management planning			✓	✓				✓	✓		✓	✓	✓		✓		✓					
Using efficient water heating systems – such as steamers	✓	✓	✓	✓		✓		✓					✓									
Providing better working environment to employees		✓	✓			✓	✓					✓					✓	✓				
Infrastructure development - building lagoons and drains for controlling sludge			✓	✓				✓			✓	✓	✓			✓						
Adopting advanced technology for eco-efficiency	✓	✓	✓	✓	✓	✓					✓											

Collaborating with (international) customers for environmental learning				✓				✓	✓					✓		✓						
Investing in new environmental projects	✓		✓	✓							✓		✓									
Insulation of pipes to conserve heat and save energy	✓	✓											✓	✓				✓				
Modifying machinery to conserve resources like gas, electricity and hot water			✓		✓	✓	✓	✓					✓									
Gardening and plantation					✓	✓		✓		✓												
Own wastewater treatment plant	✓	✓	✓	✓																		
Using combined effluent treatment plant					✓	✓												✓	×	×	×	×
Desalting of skins to reduce pollution load	✓	✓											✓									
Solar heating system	✓		✓	✓																		
ISO 14001 certification	✓							✓	✓													
Using colour coating machine – roller coating machines		✓	✓																			
Using air filters for controlling air pollution			✓				✓															
Controlling noise pollution										✓					✓							
<b>Overall initiatives</b>	<b>21</b>	<b>20</b>	<b>24</b>	<b>21</b>	<b>15</b>	<b>17</b>	<b>14</b>	<b>17</b>	<b>13</b>	<b>12</b>	<b>14</b>	<b>12</b>	<b>16</b>	<b>14</b>	<b>12</b>	<b>11</b>	<b>11</b>	<b>14</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>

Source: Developed by the researcher based on the interview data, fieldwork journal and photographs taken during data collection.

However, a closer analysis of the nature and scale of and the similarities and differences in the environmental actions of sample firms (Table 4.2) showed that environmentally engaged firms could be classified into two sub-categories: environmentally progressive SMEs (four cases: SME 4, SME 13, SME 15 and SME 19) and environmentally moderate SMEs (fourteen cases: SME 2, SME 5, SME 6, SME 7, SME 8, SME 9, SME 10, SME 11, SME 12, SME 14, SME 16, SME 17, SME 18, and SME 20). Environmentally distanced SMEs then formed the third category (four cases: SME 1, SME 2, SME 21 and SME 22).

The next three subsections of this chapter (subsections 4.2.1, 4.2.2 and 4.2.3) show how the SMEs in these three categories differed in their environmental behaviour.

#### **4.2.1 Environmentally progressive SMEs**

Four of the sample firms were classified as environmentally progressive SMEs, including SME 4, SME 13, SME 15 and SME 19 (Table 4.2). These firms were operating with a higher level of environmental commitment in that their owner-managers were fully aware of the environmental issues caused by their operations and were therefore proactively taking considerable measures for addressing those issues in turn. For example, SME 15, a fully export-oriented medium sized firm that was selling leather jackets to customers in the UK, Belgium, Germany and France, its owner-manager displayed his environmental stewardship by stating that: *'[...] whatever business you do you should not damage the environment [...] End of the day, it is about killing ourselves. Make whatever progress you want to, but why to damage yourself'*. He transmitted his environmental commitments into practice by taking both pollution prevention and pollution control measures in his firm.

As a reminder (Section 2.2), while the pollution prevention measures can enable firms to reduce, change or prevent emissions and effluents through better housekeeping, material

substitution, recycling and process innovation, pollution control measures can capacitate them to trap, store, treat and dispose emissions and effluents by using end-of-pipe technologies (Ortolano et al., 2014; Bönnte and Dienes, 2013; Frondel et al., 2007; van Berkel, 2007; Hart, 1995).

**(a) Pollution prevention and pollution control measures**

Pollution prevention measures of SME 15 included a number of cleaner production practices such as the water and chemical conservation initiatives, substitution of inputs like using less harmful chemicals and recycled inputs, for example, chrome and water (Table 4.2). These practices not only enabled the firm to reduce its environmental footprints but also made it an eco-efficient unit by controlling the input intensity of processes (van Berkel, 2007). Thus, its owner-manager asserted:

*'[...] we have made our processes more efficient. We changed the chemicals. Then we have changed the system of hot water. Earlier, we used to run the boiler with furnace oil and furnace caused pollution. In order to remove that, we have fitted the solar system. Then we have fitted the screens on drains [...] When I practically did all this, [...] I experienced that there are financial benefits as well. You also get those [...] can reuse the same water. If sludge is maintained that can be sold. I mean quality does not cost it pays. Whatever you spend in the right direction, you will receive that back' (SME 15).*

Regarding pollution control measures, SME 15 had set up its own effluent treatment plant. It was treating the contaminated wastewater before discharging it into the open drains. Since the firm was progressing well, it had managed to raise sufficient financial resources needed to buy such expensive end-of-pipe treatment technologies. Thus, its owner-manager asserted:

*'[...] we have recently installed the wastewater treatment plant [...] major source of pollution load in our tannery is wastewater, at the stage of drumming. There we have adopted the practice of screening [...] we then treat the wastewater. In doing so, we try to control its acidity and PH. We control TDS and heavy metals [...] and then discharge that' (SME 15).*

Just like SME 15, other environmentally progressive firms (SME 4, SME 13 and SME 19) also displayed a higher level of environmental commitment while their owners and managers talked about their orientation towards environmental issues (Table 4.3). Moreover, these firms were also seen to have been proactively taking both pollution prevention and pollution control measures, which enabled them to reduce their environmental footprints while also exploiting the attached eco-efficiency benefits (van Berkel, 2007) from those practices (Table 4.3). For example, they were conserving inputs like water and chemicals by properly weighing them according to their production recipes instead of adding those on the basis of rough estimates. They were also using better quality and environmentally less harmful chemicals substituting the harmful ones which they were using previously. The new less harmful chemicals could also help them achieve a higher penetration level in leather and thus lesser wastage of resources. Moreover, they were also using some recycled inputs such as chrome.

**Table 4.3: Within case evidence about environmental commitment, pollution prevention and pollution control measures in environmentally progressive SMEs**

	<b>SME 4</b>	<b>SME 13</b>	<b>SME 19</b>
Environmental commitment	<i>'It all depends upon the management how they perceive things. These are all educated people. He himself graduated from Northampton, in 1964. Therefore they have a different vision [...] The top management, who are the directors, they tell us that this area seems to be problematic [environmentally] and working should be done. So, we start working in that area'.</i>	<i>'Look, we should think like this that we are to stay here and our children are also to stay here. So, if we generate pollution through our business that will be harmful'.</i>	<i>'[...] you should have a cleaner working environment where there should not be pollution. Things should be clean'.</i>
Pollution prevention measures	<i>'For monitoring, first of all, we installed the flow meters in order to measure the volume of water that we were using. The water that was going out of the drain, we have an open drain, for that, we installed a ware [...] We had to calculate all this'.</i>	<i>'Initially, we set up a chrome recovery system but then after doing some research we learned how to achieve maximum penetration of chrome in the drum during a process'.</i>	<i>'Look, cleaner production is due to some chemicals, which are banned. There are two types of cleaner production. One is environmental cleanliness, which is not so hazardous. The original hazard is when you are handling hazardous chemicals, the banned chemicals [...] such as they have banned thyroids in Europe; we have also stopped using thyroids here. There are some dyes, the azo dyes. We have stopped using azo dyes'.</i>
Pollution control measures	<i>'The area where we are placed [...] we are alone [...] we do not have the system of combined treatment plant [...] Our plant is installed; it is installed at the individual level'.</i>	<i>'Look, after getting in contact with NEC or after the system of the treatment plant in Kasur, we set up a treatment plant within our tannery'.</i>	<i>'We have installed an effluent plant in our tanneries. We are treating the water. Not fully, but at least to some level it is treated'.</i>

Source: Developed by the researcher based on the interview data.



**(b) Measures for adopting the advanced cleaner technologies**

Being well aware of the environmental and economic benefits of cleaner technologies, every environmentally progressive firm took measures to adopt these. While each of these firms had set up its own wastewater treatment plant, they had also housed some other advanced technologies such as the colour coating machines and energy efficient heating systems (Table 4.2). For instance, while talking about their cleaner technology adoption measures, owner-manager of SME 15 asserted that they were using the solar heating system and roller coating machine which had enabled them to address the issues of air pollution and at the same time conserve resources.

*‘For controlling air pollution, we have sold the boiler and have converted the water boiling plant to solar system [...] There is no [environment related] wastage in that. Instead of using the spraying plant we have fitted the roller-coating machine. That also has zero percentage wastage for the environment’ (SME 15).*

Similarly, respondents from the other three environmentally progressive firms (SME 4, SME 13 and SME 19) also appreciated the environmental value of adopting cleaner technologies, meeting customers’ demands and exploiting attached economic benefits (Table 4.4).

**Table 4.4: Within case evidence on technology adoption measures in environmentally progressive**

SME 4	SME 13	SME 19
<i>'[...] we have fixed solar tubes for water heating [...] we can have sufficient hot water from there. The use of boiler has [thus] reduced'.</i>	<i>'These [imported machines] are very energy efficient [...] they are wonderful in terms of quality, innovation and electric consumption [...] colour coating machine does not generate gas, which the spraying machine does [...]'.</i>	<i>'Look, because right from the beginning, we were in the export business [...] On visiting Italy, customers used to give us their product to develop and tell about the technology to be used for that. Their technicians used to visit us here and tell us and we used to adopt that'.</i>

Source: Developed by the researcher based on interview data.

**(c) R&D measures for eco-innovations**

Environmentally progressive firms were quite research active. They had made in-house formal R&D arrangements for exploring ecological knowledge. As a reminder, knowledge exploration can comprise of activities such as 'search, variation, risk taking, experimentation, play, flexibility, discovery, [and] innovation' (March, 1991, p. 71). The main focus of R&D initiatives of environmentally progressive firms was to search for eco-friendly innovations enabling them to control input intensity of their processes (van Berkel, 2007) and reduce their pollution load. For example, the owner-manager of SME 15 asserted:

*'I have personally designed a conditioning machine. I mean no such machine exists. I felt that such a machine should be there [...] I did research [...] with the conditioning machine, I have controlled the dust to a greater extent' (SME 15).*

Just like SME 15, other environmentally progressive firms (SME 4, SME 13 and SME 19) were also seen to have been proactively researching to achieve their sustainability targets (Table 4.5).

**Table 4.5: Within case evidence on R&D initiatives of environmentally progressive SMEs**

SME 4	SME 13	SME 19
<i>'[...] they [owner-manager] have given the whole process to the R&amp;D department [...] For everything we used to run a trial at a pilot scale and if we found that feasible we used to go ahead with that'.</i>	<i>'Initially, we set up a chrome recovery system but then after doing some research we learned how to achieve maximum penetration of chrome in the drum during a process'.</i>	<i>'To sustain the business, R&amp;D cell would have to be made in the factory. And the role of R&amp;D in the future agenda is that what is to be introduced in the future and what is to be sold [...]''.</i>

Source: Developed by the researcher based on interview data.

**(d) Measures for acquiring ecological knowledge through environmental collaborations**

Environmentally progressive SMEs were quite open and flexible for advancing their environmental knowledge resources by collaborating with external stakeholders such as the cleaner production centres (SME 4, SME 13 and SME 15), management of common effluent treatment plants (SME 13) and input suppliers (SME 4, SME 13, SME 15 and SME 19). It is however noteworthy that not only were these the owners and managers of these SMEs who benefited from external knowledge repositories, the 'eco-literacy' skills (Tilley, 2000) of their labour-force were also advanced through these channels. As a reminder, 'eco-literacy' skills refer to the ability of individuals, such as the owners, managers and labour force, to understand and implement/follow the principles of environmental protections (Tilley, 2000). Consistent with prior literature (Wassmer et al., 2014; Ortolano et al., 2014; Sarkis et al., 2010; Fuller and Tian, 2006), environmentally progressive leatherworking SMEs were thus seen to have been actively using their networks for advancing their ecological learning. For instance, the owner-manager of SME 15 asserted:

*'As far as CPC is concerned I have been in contact with them for testing purposes. I also used to attend seminars there' (SME 15).*

These seminars were about raising environmental awareness and developing environmental competency amongst leatherworking firms, as the project manager of Cleaner Production Centre (CPC) said:

*‘We made them realise that they were causing diseases [...] people gradually started to get convinced. It was like we regularly used to knock at their doors and at times used to invite them for training sessions, and at times we used to visit them personally [...]’ (Project manager, CPC).*

Just like SME 15, the other three environmentally progressive firms (SME 4, SME 13 and SME 19) were also seen to have been acquiring environmental knowledge by collaborating with different stakeholders (Table 4.6).

**Table 4.6: Within case evidence on environmental collaboration for advancing environmental learning in environmentally progressive SMEs**

SME 4	SME 13	SME 19
<i>‘Some are Germans and some are Italian suppliers, [...] They give us guidelines that this chemical is good and this would be needed in lesser amount, and it would run well with lesser volume of water or its fixes better, it has lower COD and BOD values so we keep receiving such information from there as well’.</i>	<i>‘[...] they guided us, alongside this project [combined effluent treatment plant in Kasur], lectures about in-house improvements were arranged. They informed about desalting [...] We learned about the proper RMP, temperature maintenance and the PH level required for better chrome penetration. All such awareness came to us through that project’.</i>	<i>‘There have been different campaigns. For example, the Netherlands [...] gave some funding and NEC was made. Their unit was established in Lahore with the aim of educating the industry about effluent treatment plant [...] They properly do the audit and tell us about what and how different things need to be done [...] you need to know at least something from somewhere. Due to some hurdles, we have to learn things from other sources’.</i>

Source: Developed by the researcher based on interview data.

***(e) Initiatives for investing in new environmental projects***

Environmentally progressive SMEs were also proactively investing in new environmental projects. As noted earlier (Table 4.4), they were keen to buy environmentally responsible advanced machinery such as effluent treatment plants for treating contaminated water, solar water heating systems replacing conventional boilers, and colour coating machines replacing conventional spraying plants. It was done proactively because these firms either had sufficient economic resources or had the ability to raise those somehow, in addition to their owner-managers having the competency to appreciate the value of becoming more environmentally responsible. However, compared to SME 13, the other three of these firms, SME 4, SME 15 and SME 19, were seen to have been more active in taking such initiatives. At the same time, two of these firms, SME 4 and SME 15, were relatively proactively investing in modifying existing technological assets with the aim of conserving resources and controlling pollution. Possibly, the differences in investing in new environmental projects between these SMEs could be attributed to the idiosyncrasies in the ability of owner-managers and thus their management styles. Compared to SME 13 and SME 19, the owner-managers of SME 4 and SME 15 had industry specific, degree level qualifications (they were graduates from the Institute for Creative Leather Technologies (ICLT), previously also known as the Nene College for Higher Education, Northampton, UK). Thus having a profound insight about addressing the environmental issues of their businesses they were seen to have been more actively modifying machines according to the needs of their businesses, alongside proactively investing in new cleaner projects. The following evidence, for instance, supports these findings.

*'Look, because all these things are interlinked [...] for a trial, we attached inverter with a drum. And it had its impact [in] [t]hat in place*

*of a motor of about 15 horsepower, we started to use a motor of 10 horsepower [...] That saved energy for us' (SME 4).*

*'I have developed some machines personally. For example, I have developed the tumble drier [...] [t]hey were washers for a textile unit. I have converted those by attaching the steamers [...] I have been purchasing redundant machines from some other units and then have modified those according to my requirements and I think they are working fabulously' (SME 15).*

**(f) Initiatives for adopting environmental management systems**

Regarding environmental management certifications, only one of the environmentally progressive firms, SME 4, had attained ISO 14001 certification (Table 4.7). SME 13 and SME 15 were preparing themselves to apply for such environmental certifications. For instance, as the owner-manager of SME 15 asserted:

*'I think, a benefit of living there [in the UK] has been that I got better exposure about my field [...] And that is a step for moving towards ISO 14000 and now we shall work on that [...] we are getting the BSC audit, Business Social Compliance, of our tannery [...] that we are not using child labour, not damaging the environment and not using any harmful chemicals in the product' (SME 15).*

However, owner-manager of SME 19 did not mention any thing in this regard. Possibly because this firm either had customers who were not requiring it to have environmental certifications, or it was running its systems so effectively that a need for these was not felt.

**Table 4.7: Within case evidence on the status of formal environmental management systems in environmentally progressive SMEs**

SME 4	SME 13	SME 19
<i>'[...] we have got certifications. We have ISO 9000 and 14000 certifications [...] ISO 14000 is for environment. Everything about environment is there. For example, waste monitoring is done under that, how their disposal is done, how we are dealing with the chemicals that are hazardous for health. Mainly, treatment plant is considered under this, under ISO 14000'</i>	<i>'No, we have not got ISO certification. NEC provided us all guidance about this. Presently, we are exporting to the tanneries in Europe and Far East. We are supplying them the raw material. I mean we have limited export of finished leather [...] As we will start operating as a retailer then they will start asking us about such things and we will have to adopt these'.</i>	No evidence provided by the respondent.

Source: Developed by the researcher based on interview data.

### Section summary

In summary, the environmental actions of environmentally progressive SMEs show that these firms proactively take the pollution prevention and pollution measures for reducing their environmental footprints (Ortolano et al., 2014; Bönte and Dienes, 2013; Frondel et al., 2007; van Berkel, 2007; Hart, 1995). However, these initiatives are also underpinned by the philosophy of exploiting the attached economic opportunities. Thus these firms display themselves to be 'advantage-driven' SMEs (Parker et al., 2009) who possess the capability of 'strategic proactivity' (Aragón-Correa et al., 2008) in that they strategically take pragmatic environmental measures seeking to reap the environmental, economic and competitiveness benefits simultaneously (Simpson et al., 2004).

#### 4.2.2 Environmentally moderate SMEs

Fourteen of the sample firms, SME 2, SME 5, SME 6, SME 7, SME 8, SME 9, SME 10, SME 11, SME 12, SME 14, SME 16, SME 17, SME 18 and SME 20, were categorised as environmentally moderate SMEs (Table 4.2). The majority of these firms were operating as

medium sized units (SME 2, SME 5, SME 7, SME 8, SME 9, SME 10, SME 11, SME 12, SME 16, SME 17, SME 18 and SME 20), and only a couple of these were of small size (SME 6 and SME 14). While six of the environmentally moderate firms (SME 2, SME 5, SME 8, SME 9, SME 16 and SME 18) were serving only the international customers and three (SME 6, SME 11 and SME 14) were operating only in domestic market, five of these firms (SME 7, SME 10, SME 12, SME 17 and SME 20) were selling their products both in domestic and foreign markets (Table 3.4 and Table 3.5).

All these firms showed consideration towards addressing environmental issues, as their owners and managers displayed a long-term orientation towards the need to address the challenges of environmental degradation. For instance, owner-manager of SME 16, a medium sized, fully export-oriented firm said: *'We will have to protect the mother earth if we are to live on this'*. Similarly, owner-manager of SME 11, a medium sized firm, serving customers only in the domestic market, asserted that: *'It is our duty to adopt a new process and think that the future generation will get benefit from this and it will also benefit us [...] our ancestors did not stay here forever. We will not stay here forever either [...] if we do something good today, our future generations will benefit from that tomorrow [...]'*. Likewise, owner-manager of SME 7, a firm operating both in domestic and international markets, displayed a higher level of environmental commitment by stating that: *'[...] we are not doing this just to get the business; we are going for this because it is imperative for the survival of human beings. It is important to save our children from pollution [...] As a human, it is my duty towards others'*.

All environmentally moderate SMEs were working to reduce their environmental footprints. However, often they were constrained by the scarcity of economic resources



limiting them from taking more advanced environmental measures, like their environmentally progressive peers, such as buying the latest cleaner technologies and having formal in-house R&D arrangements for exploring environmental knowledge. For instance, as the owner-manager of SME 14, an environmentally moderate firm, asserted: *'If you have finance only then you will set up heavy machinery. Now for machinery, for a medium sized tannery, at least ten million rupees should be in the pocket. So, one basic reason is financial constraints. If we have finance we can go beyond the medium size even'.* However, they all aspired to finding ways to become environmentally responsible businesses by collaborating with various industry stakeholders such as intermediary organisations and input suppliers. As a minimum, each firm in this category had adopted pollution prevention measures in one form or the other.

**(a) Pollution prevention and pollution control measures**

As noted earlier (Section 2.2), while the pollution prevention measures can enable firms to reduce, change or prevent emissions and effluents through better housekeeping, material substitution, recycling and process innovation, pollution control measures can capacitate them to trap, store, treat and dispose emissions and effluents by using end-of-pipe technologies (Ortolano et al., 2014; Bönnte and Dienes, 2013; Frondel et al., 2007; van Berkel, 2007; Hart, 1995).

Each of the environmentally moderate SMEs had adopted cleaner production practices in one form or the other (Table 4.8), which allowed them to prevent pollution, for example, by conserving inputs like water and chemicals, using environmentally less harmful chemicals, controlling solid waste within the house and using some recycled inputs like chrome (Table 4.2 and Table 4.8). For instance, the respondent from SME 7, an

environmentally moderate firm, narrated that they were able to conserve chemicals and water by adopting the measurement practices:

*‘We are doing much better. Everything is weighed in our tannery. We weigh the leather and chemicals and care is taken to the extent that grams are also considered while weighing materials [...] We have fitted the water meters for measuring water’ (SME 7).*

Similarly, other environmentally moderate firms were also seen to have adopted cleaner production practices for preventing pollution including the conservation of water (for example, SME 6 and SME 20), using better quality chemicals (for example, SME 5 and SME 10) and developing infrastructure for controlling sludge (for example, 17) (Table 4.8). However, compared to the some environmentally progressive SMEs whose owner-managers had gained industry related and environment-specific formal qualifications and therefore were well versed with the environmental issues and the means to address those (for example SME 4 and SME 15), owner-managers of environmentally moderate SMEs generally learned about the pollution prevention measures informally, for example, while acquiring ecological knowledge from cleaner production centres (for example, SME 10) and/or from input suppliers (for example, SME 16).

**Table 4.8: Within case evidence on pollution prevention measures in environmentally moderate SMEs**

Firms	Representative evidence
SME 2	<i>‘[...] we try our level best to use chemicals in an appropriate proportion [...]’</i>
SME 5	<i>‘A good chemical has good active matters. We do not need water for the 100 percent capacity of the drum. We can reduce it up to 60 percent. So, we save about 40 percent of the weight of the water [...] when using good quality chemicals, we can achieve a higher level of chemical penetration in the leather with lesser water. Initially, that [chemical] appears to be expensive but at the end that is not expensive’.</i>

SME 6	<i>'[...] we buy chemicals from the UK companies. You can say that their quality and process systems are much better [...] We try our level best not to use those items that are banned and use those ones that are not harmful for health [...] I learned different practices for controlling the usage of water [from CPC] [...] When leather is processed it needs washing [...] opened-door washing results in wastage of water so we have adopted closed-door washing'.</i>
SME 7	<i>'We have fitted the water meters for measuring water'.</i>
SME 8	<i>'Water is a great blessing of Allah and it should not be wasted. So I make every effort that water is not wasted. If there is some water leakage that is promptly mended [...]'</i>
SME 9	<i>'In order to ensure that no water leakages occur, the water taps are repaired regularly. Moreover, we use measured water [...] We try to achieve 100 percent penetration of Chrome so that no chrome is wasted and drained out'.</i>
SME 10	<i>'A course was also arranged by the CPC for this [...] Initially, a lot of water was running in the drum for the washing process. They taught us the process of batch washing [...] the batch washing process helped us to minimise the use of water'.</i>
SME 11	<i>'We use closed-door washing'.</i>
SME 12	<i>'At the internal level, for example, we started to reduce the use of salt [...] We have adopted the closed door tanning process'.</i>
SME 14	<i>'They [CPC] also fitted water meter in our tannery. The purpose was to analyse if the extra water was used then how to minimise that [...] that helped us to improve things. Though that did not affect the quantity of chemicals significantly, but that affected the volume of water used'.</i>
SME 16	<i>'The chemical companies have their market agents who visit us and tell about the new chemicals [in that] it has better uptake, its active matter is better, if you run it there will be lesser environmental concerns, it will improve the penetration of dyes, it is giving a better shade. So, we run a small-scale trial and check the new chemicals [...] we have to keep the pace (of the process) at which the leather exhausts the chemicals completely. That is also better for us because we have to reduce the cost [...] So, that is good not only for us but also for the environment [...] we want minimum dyes to get wasted [...]'</i>
SME 17	<i>[...] what we have done is that we have built deep lagoons where water is drained and there the solid waste settles down and the water is drained out. So we have taken measures for better solid waste management.</i>
SME 18	<i>'[...] we have reduced a lot, we have reduced the contamination a lot. Particularly, through REACH compliance because our chrome content, which is more dangerous, we have a very less quantity of chrome in the fluid [...]'</i>
SME 20	<i>'[...] it is important that we use environmentally friendly products which are biodegradable such as detergents so that they do not affect the marine life. And that is what we generally use' [...] Within the cleaner production [...] we try to use lesser water. Second is about reusing the water, for example, the float of the drum which cannot be used elsewhere at least that can be used for washing the floor. We mainly try to use that'.</i>

Source: Developed by the researcher based on interview data.

Generally, environmentally moderate SMEs were not seen to have been taking pollution control measures. Compared to their environmentally progressive counterparts, none of these firms had its own wastewater treatment plant. However, three firms (SME 2, SME 5 and SME 20), which were operating from the larger tannery clusters were benefiting from the collaboratively developed technological assets in the form of common effluent treatment facilities allowing them to claim for taking pollution control measures. For instance, the respondents from SME 5 and SME 20 appreciated the benefits of having a common pollution control facility.

*'I do not think, there are any other major sources of pollution here because a big treatment plant is now there. There was a time when you could not see a single crop in the surroundings. Now we can have crops there. For us, the establishment of the treatment plant is a big positive step and we have a very good feeling about it. We appreciate it a lot' (SME 5).*

*'[...] with reference to the plant [wastewater treatment plant], we were given training that lesser the float we would generate better it would be for the plant and lesser would be our load on the treatment plant' (SME 20).*

In fact these firms had adopted a 'coopetition' approach (Daddi et al., 2010; Biondi et al., 2002) for reducing their environmental footprints, which enabled them to share their limited resources with their peers for developing the collaborative technological assets in the form of a combined effluent treatment facility and from which they were all benefiting.

**(b) R&D initiatives for eco-innovations**

All environmentally moderate SMEs were taking some measures to undertake R&D for innovating their production processes. However, because of not having sufficient in-house resources and capabilities, they were doing so by seeking the knowledge and support from various external stakeholders such as the cleaner production centres, product testing laboratories and input suppliers (Table 4.9). For example, owner-manager of SME 14 asserted that they were able to know about the latest research about eco-friendly production processes through the Cleaner Production Centre (CPC):

*'[...] whatever new information we get that comes from them [Cleaner Production Centre]. Otherwise, it is hard to go outside for information seeking because of business engagements. They [...] share any latest research'.*

Similarly, some other firms, for instance, SME 2, SME 5, SME 16 and SME 17, were collaborating with chemical companies to benefit from their research for adopting eco-friendly production processes (Table 4.9). At the same time, some firms in this category, such as SME 2, SME 6, SME 8, SME 18 and SME 20, were seeking R&D support from the product testing laboratories, while they had also made some in-house, less formal arrangements for running small scale trials for improving the input intensity of their processes (Table 4.9).

**Table 4.9: Within case evidence on R&D initiatives of environmentally moderate SMEs**

Firms	Representative evidence
SME 2	<i>'Look, multinational companies such as BSF their chemicals are REACH certified. But still, the new companies that enter the market, [...] for example, from Spain, Italy and Vietnam, we get them tested from SGS [a product testing lab] [...]'.</i>

SME 5	<i>'We mostly use German chemicals. We also buy from TFL, it is one of the biggest chemical companies in the world. Then there is another chemical company called Shill, it is also German. Then there is Pulkara, which is also German [...] So, when we work with such type of companies, their technicians guide us a lot'.</i>
SME 6	<i>'That [small sized vessel/drum] is used for experiments [...] That is a routine matter. If I need to process some leather and want to see what process would suit better. Suppose if I have purchased 1000 pieces, I would take 2 hides and experiment the process on those. I will then judge if the process fits well or are there any problems in that. If no problems are encountered then the process will be completed [in the large size vessels/drums]'.</i>
SME 7	<i>'Although our staff was already educated, they [CPC] trained them about using the chemicals in a better way so that minimum chemicals are drained with water'.</i>
SME 8	<i>'[...] we have an experiment drum to run the processes and later on get the leather tested from a lab'.</i>
SME 9	<i>'We get a lot of information about the new developments from the chemical companies. Their employees get training and then transfer that knowledge to us'.</i>
SME 10	<i>'As my products are a bit better than others so I prefer to use the imported chemicals to avoid any hassle. I am one of those who tests their product at their own end before delivering. I get all the product testing done that is required internationally'.</i>
SME 11	<i>'[...] whenever a seminar was arranged by CPC or in the Chamber, we attended that. They have provided much guidance to people about this'.</i>
SME 12	<i>'It is easy to comply with REACH standards with the imported chemicals. We also question the chemicals suppliers about this. Whenever we buy a new product we ask them if that would meet the standards [...]'</i>
SME 14	<i>'[...] whatever new information we get that comes from them [CPC] [...] They [...] share any latest research'.</i>
SME 16	<i>'The chemical companies have their market agents who visit us and tell about the new chemicals [...] we run a small-scale trial and check the new chemicals'.</i>
SME 17	<i>'We tell them [chemical suppliers] about the required standards and [...] they are given stuff for running different trials. They run the trials for us and fulfil our requirements. Accordingly, we remanufacture gloves [...]'.</i>
SME 18	<i>'[...] we are getting some help from laboratories such as SGS and BLMRE, you know BLMRE in England, they are providing us with some guidance and we are also using the internet [...] so we are actively using our networks'.</i>
SME 20	<i>'[...] we keep searching ways through which we can shorten our processes. For this, we keep running trials that how to achieve that [...] we try that the process is short or compact enough to use limited floats [...] That is the reason why we run samples in the lab beforehand [...]'</i>

Source: Developed by the researcher based on interview data.

**(c) Initiatives for developing eco-literacy skills amongst the human resources**

Environmentally moderate SMEs were also taking measures to advance the ‘eco-literacy’ skills (Tilley, 2000) amongst their human resources. As a reminder, ‘eco-literacy’ skills refer to the ability of individuals, such as the owners, managers and labour force, to understand and implement/follow the principles of environmental protections (Tilley, 2000).

For instance, the owner-manager of SME 7 asserted that *‘[f]or minimising it [pollution], what we do is that, we train our staff [...]’*. He further explained that for advancing the environmental capabilities of their human resources they were seeking support from the Cleaner Production Centre [CPC]: *‘[...] they [CPC] trained them [labour-force] about using the chemicals in a better way so that minimum chemicals are drained with water’*.

Just like SME 7, the other environmentally moderate firms also did not have the in-house ability to advance the ‘eco-literacy’ skills amongst their labour-force. They were, therefore, relying on the support from various intermediary organisations. For instance, for the getting their workers trained environmentally, SME 6, SME 7, SME 8, SME 9, SME 10, SME 11, SME 14, SME 16, SME 17 and SME 18 were collaborating with Cleaner Production Centre [CPC], SME 12 with Cleaner Production Institute [CPI] and SME 2 and SME 5 with the management of Kasur Tannery Waste Management Authority [KTWMA] – the management of combined effluent treatment plant (Table 4.10). Many environmentally moderate SMEs were also seeking support from the representatives of various chemicals suppliers to make their human resources well aware of using environmentally less harmful inputs (Table 4.10).

**Table 4.10: Within case evidence on the initiatives for developing eco-literacy skills amongst human resources in environmentally moderate SMEs**

<b>Firms</b>	<b>Representative evidence</b>
SME 2	<i>'Actually, the labour is not educated. They follow what [we tell them]'</i>
SME 5	<i>'I love counselling my staff. So, I always discuss with my production people [...] hesitation might come from the drumming team or the ones operating the vacuum machine [...] we appreciate them and encourage them to do that [adopt eco-friendly processes]'</i>
SME 6	<i>'When I go somewhere or attend some event to learn things, on returning, I call them and share my learning [...] I tell them about the process that I learn. I also tell them that if we modify our process how that will save our resources. So, they try to adopt the new processes'</i>
SME 7	<i>'For minimising it [pollution], what we do is that we train our staff [...]</i>
SME 8	<i>'I remain involved in the production process, about 60 to 65 percent. I keep an eye on the processes for improvement and keep discussing with the employees how an issue can be resolved'</i>
SME 9	<i>'We train our employees according to the European standards and customer requirements [...] Whatever the CPC and the Environment department tell, our foreman gives the awareness about that to our employees and labour. As some of the labour is not educated, we have put up sign posts [posters] to show them that how they are expected to work [...] We keep educating our employees that when they are not working no extra lights should be left switched on'</i>
SME 10	<i>'[...] we educate them about using the masks [...] A course was also arranged by CPC for this [...]</i>
SME 11	<i>'The employees, who are working with us, are here for the last 20 to 22 years. They have developed skills over the years. However, we keep advising them [...] It does not happen every month. But after about two or three months new information is disseminated, which we learn and share with our employees'</i>
SME 12	<i>'[...] they [NEC] helped us a lot about these things. They trained us about many things, which we adopted at that time. Then there used to lectures for the management and employees'</i>
SME 14	<i>'[...] we keep grooming the new labour as well. Gradually, within 2 to 3 months they also get trained'</i>
SME 16	<i>'[...] we keep advising [the labour] that what to do and what not to do'</i>
SME 17	<i>'[...] we tell them that if you are going somewhere turn off the machine before leaving. You should not leave the machine turned on'</i>
SME 18	<i>'It is a continuous process [...] We have hired educated people and daily guide them'</i>
SME 20	<i>'[...] we have to tell them, educate them and at times we have to be strict with them [...] it is our responsibility, who have the awareness, that we tell them that wearing those [the mask, gloves and goggles] will be beneficial for them'</i>

Source: Developed by the researcher based on interview data.



**(d) Initiatives for adopting cleaner technologies**

Contrary to environmentally progressive SMEs, environmentally moderate firms could not afford to buy the most advanced cleaner technologies such as the colour coating machines and solar heating systems. Even if they had purchased some imported machines, such as the Italian and German shavers, split machines, drying chambers and polishers, those were not brand new and often purchased locally. For instance, the owner-manager of SME 9, an environmentally moderate firm, asserted that: *'We buy the imported machines from different stockists [locally], who mainly import the machines from Italy, Germany, Finland and France'*.

Depending on their needs, some environmentally moderate firms had also considered modifying their existing machines for becoming eco-efficient by controlling the input intensity of their processes (van Berkel, 2007) (Table 4.11). For example, owner-manager of SME 7 explained that by seeking support from an independent consultant they modified their heating/drying system which helped them in reducing their environmental footprints while also conserving energy:

*'Instead of using steam, they [private consultant] converted that into the sui-gas system, the direct heating system. We have saved a lot by adopting that. Earlier, we used to run our boiler with diesel then it was converted to gas and then they introduced the direct heating system' (SME 7).*

Owner-manager of SME 6 also shared the similar experience:

*‘Although we purchased it [drying chamber] locally, but later on modified it according to our needs. For example, the size of skin hides that we processed was larger and we had to change the sides of hides quite often so we enlarged the size of the room [drying chamber]’ (SME 6).*

Thus as the evidence consolidated in Table 4.11 shows, each of the environmentally moderate SMEs had taken some measures for adopting the cleaner technologies, may that be less advanced, such as the dust collectors and water flow meters, or in the form of modified machines.

**Table 4.11: Within case evidence on cleaner technology adoption initiatives in environmentally moderate SMEs**

<b>Firms</b>	<b>Representative evidence</b>
SME 2	<i>‘[...] we have installed motors with higher horsepower. We can process the weight of about 600 KG instead of 500 KG. One, it helps to reduce the chemicals and labour. Second, electricity is saved. Third, a large volume of leather is processed’.</i>
SME 5	<i>‘The wastewater of vacuum machine that over flows, is stored in a big tank [...] we have to use two pumps to do this [...] We have also installed a small tank above the machine. Though Italians had not installed that. They just used that [hot water] and wasted that. We reuse the stored water in the tubes of the machines’.</i>
SME 6	<i>‘Although we purchased it [drying chamber] locally, but later on modified it according to our needs. For example, the size of skin hides that we processed was larger and we had to change the sides of hides quite often so we enlarged the size of the room [drying chamber]’.</i>
SME 7	<i>‘For buffing, the dust that is generated, contains very tiny particles, for this, we have attached dust collector boxes, with these fabric filters are attached, we collect it there [...] the benefit of the dust collector is that dust does not fly’.</i>
SME 8	<i>‘Second, I fitted the dust collector’.</i>
SME 9	<i>‘Dust collectors are fitted and the collected dust is also dumped at the dumping sites [...] local machinery is not of good quality and in order to meet the customer requirements we have to improve the technology. We buy the imported machines from different stockiest, who mainly import the machines from Italy, Germany, Finland and France’.</i>
SME 10	<i>‘Rest, as far as the shaving and buffing machines are concerned, which require extra power, I have purchased those machines that have double production capacity [...] Those are imported machines, mainly, from Italy [...] While its production capacity is double as compared to the local machine, its power consumption is not double [...]’</i>

SME 11	<i>'We have fitted the dust collectors with a couple of machines [...] Now 95 percent of such waste is reusable so people take away such waste. We have to handle very limited waste'.</i>
SME 12	<i>'[...] we have developed a system in which we do not have to make extensive use of the boiler. We have fitted a small steam generator. That definitely uses lesser energy, compared to the boiler, and it gives better production. This also results in the lesser use of gas [...]'.</i>
SME 14	<i>'[...] as these are small size machines, they use energy according to their size. We have a shaver, which is of 1 foot. The one that is imported is of 2.5 feet, 5 feet, 6 feet or 7 feet. So due to their size, our machines use lesser power'.</i>
SME 16	<i>'[...] if you plan to invest in buying a machine, you will have to earn money from the same machine. One is to cover the cost and the second is to earn money. So, what happens is that generally we buy machines that are made in Italy or the German machines [...]'</i>
SME 17	<i>'There is a buffing machine with which dust collectors are attached [...] dust that is generated during this process is collected in the dust collectors [...] and dust is also disposed of with the solid waste'.</i>
SME 18	<i>'We have the dust collector with the machine. It is collected in the big bag [...] It does not go open [...]'</i>
SME 20	<i>'[...] we are using boilers [and not solar tubes or steamers] [...]'</i>

Source: Developed by the researcher based on interview data.

### Section summary

In summary, the environmental initiatives of environmentally moderate SMEs show that these firms behave like 'advantage-driven' SMEs (Parker et al., 2009). Just like their environmentally progressive peers, they display a higher level of environmental commitment and also take pragmatic measures for reducing their environmental footprints while also focusing at exploiting the attached economic and competitiveness opportunities (Parker et al., 2009; Simpson et al., 2004). Thus, they are strategically proactive (Aragón-Correa et al., 2008) in that, instead of just reacting to the environmental requirements of different stakeholders, they have the ability to initiate changes in their environmental actions actively for exploiting the environmental and economic benefits simultaneously.

However, because of lacking sufficient economic resources, they struggle to achieve the same level of environmental improvement as their relatively resource rich environmentally progressive counterparts are seen to have achieved. Yet, given their higher level of environmental stewardship, environmentally moderate SMEs do aspire taking more environmental measures, for instance, as one of the owner-managers from this category of firms asserted: *'[...] being a part of cottage industry, whatever we could do with the available resources, we have done a lot. We wish to do more'* (SME 11).

#### **4.2.3 Environmentally distanced SMEs**

Four of the sample firms, SME1, SME3, SME21 and SME 22, were classified as environmentally distanced SMEs. Three of these were small sized firms, with fewer than 25 employees (SME 1, SME 3 and SME 22), the exception being, SME 21, which was operating as a medium sized tannery. While SME 1 was serving customers only in the domestic market, the other three firms (SME 3, SME 21 and SME 22) were operating in both domestic and international markets. However, firms operating internationally were selling in markets where environmental compliance and customers' environmental requirements were not stringent. For instance, SME 3 had customers to serve in the markets of Middle East region and SME 22 was selling in Hong Kong. Thus, these firms were not facing enough pressure from their buyers to adopt environmental practices. For instance, as the owner-manager of SME 3 said: *'Our customers ask about lab reports of the products [...] if they are clear they do not ask for anything else'* (SME 3). Nevertheless, environmentally distanced SMEs took two types of environmental measures: (a) reduction in water usage and (b) trimming of skins before processing those (Table 4.12). Yet, these measures were not environmentally-led but purely driven by the economic imperatives.

In fact, all environmentally distanced firms were located in tannery clusters that had common effluent treatment facilities. And these firms had no other option but to drain their wastewater through the channels of these plants. The management of treatment plants were charging them in accordance with the volume of wastewater they discharged. Thus, these firms had considered reducing their use of water in order to control their costs and seek legitimacy of their existence, in that they were to comply with the (informal) rules for operating in their respective clusters.

**Table 4.12: Within case evidence on reactive environmental measures of environmentally distanced SMEs**

<b>Firms</b>	<b>Representative evidence</b>
SME 1	<i>'[...] we have given attention to this issue. For example, if a tap was open, we never cared about that. But, now when we know that we have to pay the bill, we try to keep an eye on this thinking that instead of paying Rs. 10,000 let us try to reduce it to Rs. 7,000 [...] This is what we have to care about. We have become more careful, we avoid wasting water'.</i>
SME 3	<i>'We have a [...] system. The wastewater is going to the [combined effluent treatment] plant'.</i>
SME 21	<i>'Initially, wastewater was thrown directly into the sea but with the setting up of the wastewater treatment plant pollution has been controlled and water is treated before being thrown into the sea'.</i>
SME 22	<i>'We are also paying for the treatment plant [...] We have fitted screens to control the drain of leather pieces and not with an environmental motive'.</i>

Source: Developed by the researcher based on interview data.

Unlike their environmentally progressive and moderate counterparts, environmentally distanced SMEs had not adopted other cleaner production practices and eco-efficient processes such as using environmentally less harmful chemicals and adopting eco-efficient production practices (Sections 4.2.1 and 4.2.2). Moreover, they were not seen to have been engaging in the environmental capacity building of their human resources and making investments in cleaner technologies. In fact, environmentally distanced SMEs displayed a mixed behaviour of being 'profit-driven' as well as 'compliance-driven' firms (Parker et al.,

2009; Simpson et al., 2004). It is because they did not display environmental stewardship and largely focused on controlling costs by avoiding to take environmental initiatives proactively. They were doing the bare minimum needed for the very basic level of (informal) compliance to meet the terms and conditions of the management of effluent treatment plants to ensure their legitimacy to keep operating in the tannery clusters.

In contrast with environmentally progressive and moderate SMEs, owner-managers of environmentally distanced firms even distanced themselves from the discussion on environmental issues, generally regarding it a subject to be addressed by the national government (Table 4.13).

**Table 4.13: Within case evidence from environmentally distanced SMEs avoiding discussion on environmental issues**

<b>Firms</b>	<b>Representative evidence</b>
SME 1	<i>'A single individual cannot do a lot. There may be a single case where someone, who is financially strong is determined to do something [...]'</i>
SME 3	<i>'The government should do the maximum. I think, the government does not have time for such issues'.</i>
SME 21	<i>'It is a time wasting activity to talk about pollution. Talk about the socioeconomic issues [...] In 35 years, I have not seen any one died due to pollution, chemicals and environmental problems'.</i>
SME 22	<i>'We are worried about the survival of our businesses, what to talk about pollution'.</i>

Source: Developed by the researcher based on interview data.

### ***Factors inhibiting the adoption of environmental practices in environmentally distanced SMEs***

A number of factors were seen to have been inhibiting environmentally distanced SMEs from taking environmental measures. Owner-managers of these firms had got acclimatised with the polluted environment and they, therefore, were not much bothered to take

environmental protection measures. For instance, as the following evidence from SME 1 and 3 illustrates.

*'We have developed stamina [...] We live here; morning, noon and evening. We have grown old here. But an outsider feels this [pollution]'* (SME 1).

*'The reality is that when sitting here it does not smell bad to us whereas a new person gets bothered with this smell [...] everything has penetrated into our minds so we do not feel much about pollution'* (SME 3).

Partly, the behaviour of such entrepreneurs can be attributed to their lack of interest in and awareness about the impacts of environmental degradation, which seems to be further aggravated by their limited ability to comprehend the eco-friendly production processes. For instance, as the following evidence from SME 1 and SME 22 shows:

*'[...] they educate us about precautionary measures for controlling pollution, but we cannot follow these measures'* (SME 1).

*'Even if the environmental information is provided, people are not educated enough to take the [environmental] measures'* (SME 22).

Some of the research participants in environmentally progressive and moderate SMEs commented on their environmentally distanced peers, suggesting that the owner-managers of such SMEs shared the following characteristics, which left them environmentally distanced:

(a) They tended to be less well educated or uneducated:

*'The main problem of this business is that it is a business of educated people, but unfortunately, mostly uneducated people run it [...]' (SME 12),*

*'The fact is that [...] most of the tanneries here [belong to the] cottage industry and everyone is not educated' (SME 11).*

(b) Their managerial approach was less professional:

*'They lack motivation for environmental improvement. They come from diverse backgrounds. Someone might be a machine operator and the other would have been doing a similar job, so they start a business with minimal finance. So, they lack both education and awareness. Moreover, they also lack professionalism. As a labour, they understand only one process whereas when they start businesses it involves many processes [...] I think they are not professionals' (SME 10),*

(c) They had a more risk-averse approach to doing business:

*'They are afraid. They are afraid of investing money' (SME 15).*

Respondents from environmental support institutes referred to similar reasons for some SMEs to have remained environmentally distanced. For instance, as the project manager from Cleaner Production Centre [CPC] asserted:



*'[...] illiterate people resist a lot. They question, what is the benefit of doing this? We would see when something would happen [...] they are not professional' (Project manager, CPC).*

Some environmentally distanced SMEs have been influenced by the negative attitude towards environmental improvement and illegitimate business practices of other local businesses. For example, one of the respondents from an environmentally distanced SME said:

*'[...] when others are not doing it, why should I do it [...] Some people cheat, instead of draining their wastewater to the treatment plant, they drain it into other channels [...]'* (SME 22).

This respondent thought that this kind of environmentally irresponsible behaviour prevailed because the *'implementation of regulations is weak therefore people do not care much about pollution'* (SME 22). Moreover, the fear of losing competitive position in the market also appeared to have been pushing some SMEs to behave environmentally irresponsibly. In fact, by not draining wastewater into the lagoons of the treatment plant, firms could avoid paying utility charges for the services provided by the management of these plants and thus reduce their cost of production.

Another important factor inhibiting proactive environmental engagement of environmentally distanced SMEs was the financial resource scarcity (Ghisetti et al., 2015; Seidel et al., 2009; Spence, 2007). Considering that environmental improvement was an expensive activity to get engaged with, SMEs in this category were avoiding to take the environmental measures. They regarded environmental improvement an additional financial burden: *'[...] they visualise it as a leakage from their profits [...] They say it is an*

*additional activity [...]’ (Project manager, CPC).* For instance, as two respondents from environmentally distanced SMEs said:

*‘Not only the facilities are limited; the shortage of resources is also there. What can an individual do? [...] Unfortunately, the smaller units cannot afford to pay this bill [utility charges for combined effluent treatment plant] [...] The issues mainly are for the small sized units, who cannot afford and are not generally able to pay their bills or the amount of due bills rises for such firms incredibly. These are the conditions here’ (SME 1).*

*‘Smaller units cannot access the resources for better environmental engagement’ (SME 22).*

The lack of environmental consciousness, both in general public and employees, was also seen as a reason for environmental disengagement by some environmentally distanced SMEs. When these firms do not face sufficient resistance from the local communities and/or from their employees, they do not take measures to reduce their environmental footprints. For instance, as the owner-manager of SME 1 held that the local communities around the tannery clusters had got acclimatised with the polluted environment and they, therefore, were not pressing the tannery owners to control pollution.

*‘The fact is that people have become used to this. They think, let the system run as it is running [...] Let it continue as it is going on’ (SME 1).*

Talking about the less caring behaviour of employees towards the natural environment, he said:

*‘Actually, when we ask labour to do things in a different way, they say leave it, boss, it is fine for us; throughout our life, we have been doing it like this. Nothing has happened to us until today. Sir [...], individuals get used to things. Nothing happens to them, once they get used to things. If someone is new, he will get afraid’ (SME 1).*

He further narrated:

*‘People dwelling in the surrounding areas are employees of different tanneries. They are labour, they work for tanneries and they have become used to all this [...] They do not raise such issues [...]’ (SME 1).*

From a different standpoint, the above evidence confirms the arguments made elsewhere in the literature that with absent public awareness it can be challenging to advance sustainability practices in SMEs (Pimenova and van der Vorst, 2004). In the Pakistani context, such a public awareness appears to remain absent allowing some leatherworking SMEs to remain environmentally distanced.

### **Section summary**

In summary, multilevel (micro-meso-macro) factors inhibit the proactive adoption of environmental practices in environmentally distanced SMEs. At the micro level, lack of education amongst owner-managers and workers, their limited capacity to understand environmental processes, resource scarcity and owner-managers’ less professional and risk

averse approach to doing business are seen as environmental barriers in these firms. Meso level factors include the peers' negative attitude to doing business in a responsible way and limited social accountability of SMEs by local communities. At the macro level, the institutional 'gaps' (Kolk, 2014) resulting in weaker enforcement of environmental regulations and instability in economic and security situation in the country, and lack of support from national government are seen as reasons for these firms to have remained environmentally distanced.

### **4.3 Chapter summary**

This chapter has presented findings about the environmental actions and behaviour of sample firms. Based on the nature and scale of their environmental initiatives, these firms have been classified as environmentally progressive, moderate and distanced SMEs. Environmentally progressive SMEs display a higher level of environmental commitment and take much advanced environmental measures, such as the adoption latest cleaner technologies and undertaking R&D for process innovations, to deliver better environmental performance. While environmentally moderate SMEs also display a higher level of environmental commitment, they are not seen to have been taking much advanced environmental measures, unlike their environmentally progressive peers. A possible main reason for these firms to be lagging behind their environmentally progressive counterparts in their environmental improvement is seen as the absence of sufficient economic resources. Contrary to both these categories, environmentally distanced SMEs operate with a very lower level of environmental commitment. These firms are seen to have been taking only a couple of environmental measures and those too because of the pressure from some coercive institutional forces and largely for controlling the cost of production,

and not for protecting the wider natural environment. The analysis and discussion in the remaining chapters of this thesis are informed by this classification of SMEs. As a reminder, the following three chapters focus on comparative analysis of environmentally progressive and moderate SMEs. It is because firms in these two categories were environmentally driven and had advanced environmental capabilities. Environmentally distanced SMEs do not form part of analysis and discussion in these chapters because they were neither environmentally motivated nor did they take measures for advancing environmental capabilities. Multilevel factors that underpin their environmentally irresponsible behaviour are discussed at length earlier in this chapter (Section 4.2.3).

## **Chapter 5 Understanding multilevel environmental drivers in environmentally progressive and moderate SMEs**

### **5.1 Introduction**

The previous chapter has examined the environmental behaviour of leatherworking SMEs in Pakistan. Based on the nature and scale of their environmental actions, the sample firms have been classified as environmentally progressive, moderate and distanced SMEs. While environmentally progressive and moderate SMEs adopt environmental practices proactively, environmentally distanced firms do not do so. Factors inhibiting proactive environmental engagement in environmentally distanced SMEs are discussed in the preceding chapter (Section 4.2.3).

This chapter investigates the multilevel (micro-meso-macro) factors that drive environmentally progressive and moderate SMEs for proactively taking the environmental improvement measures. In the process, it also examines if and how the identified environmental drivers interact with each, as opposed to operating as piecemeal factors, while leading SMEs in these two categories to adopt environmental practices.

There is burgeoning literature that looks into sustainability issues in SMEs. One stream of this literature provides insights about the motivational factors driving these firms to adopt eco-friendly practices (Section 2.3). The most commonly examined environmental drivers are the compliance with environmental regulations (Section 2.3.1), economic and competitiveness benefits (Section 2.3.2) and personal (ethical/moral) values of entrepreneurs (Section 2.3.3). The literature also reports some evidence about intermediary organisations, such as the industry associations and environmental support

institutes, advancing environmental sustainability in SMEs (Section 2.3.4). However, as is also discussed earlier (Section 2.3), there is an increasing recognition of the need to trace the interactive effects of these multilevel factors on the environmental engagement of firms (Hamann et al., 2015; Muñoz and Dimov, 2015; Foxon, 2011; Menguc et al., 2010). Drawing on institutional theory, researchers have applied the concept of isomorphism (DiMaggio and Powell, 1983), in an effort to explain how environmentally responsible business activity can be promoted (Spence et al., 2011; Bansal, 2005; Delmas and Toffel, 2004; Rivera, 2004; Bansal and Roth, 2000; Jennings and Zandbergen, 1995).

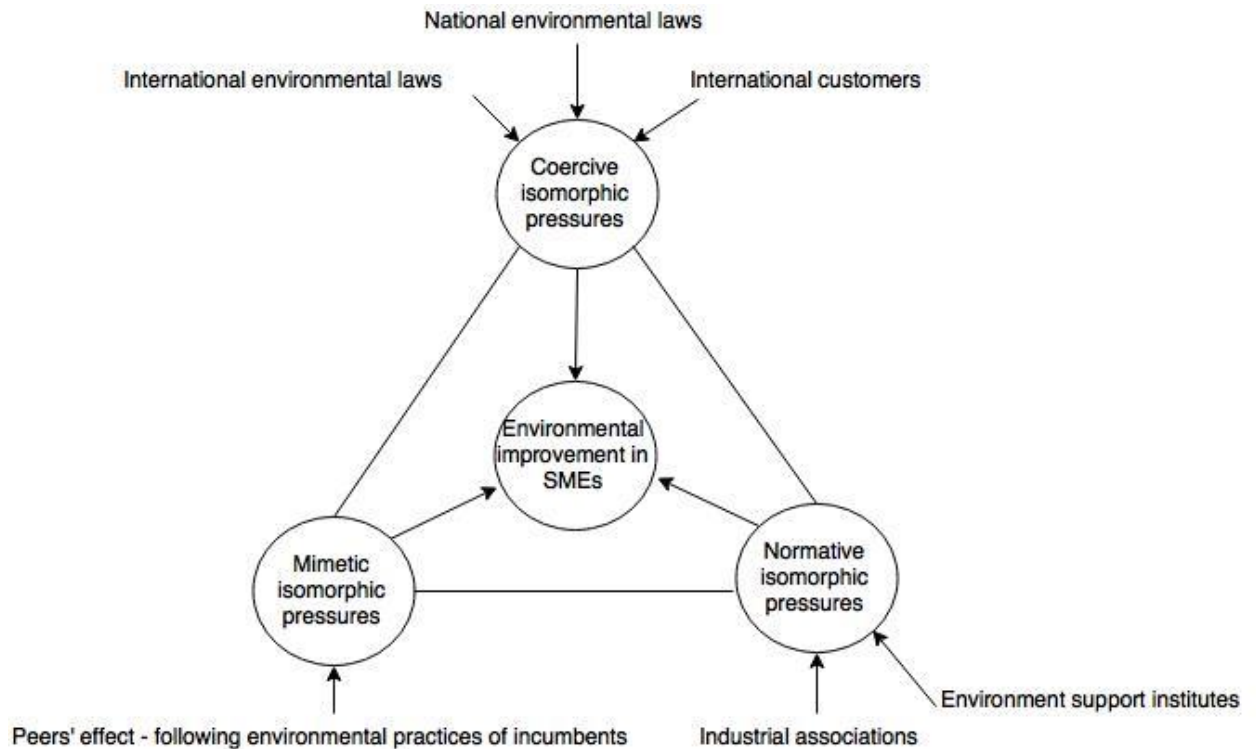
As noted earlier (Section 2.6.1), isomorphism refers to a similarity of the processes or structure of an organisation to those of others that it may achieve by imitating others or taking measures independently enabling it to become compatible with its environmental characteristics and looking similar to its peers in the field (DiMaggio and Powell, 1983). Isomorphic pressures can be of three types: coercive, mimetic and normative (DiMaggio and Powell, 1983). Coercive isomorphism can stem from formal pressures. For example, regulatory bodies can exert pressure on firms to comply with environmental regulations. Mimetic isomorphism emerges out of uncertainties, which can push firms to copy others, mainly the best practices, to look as good as others do. For example, if customers ask for adopting environmentally responsible production processes and one firm does that successfully and being considered legitimate attracts good business, other firms in the field are likely to model themselves after that successful firm. Finally, normative isomorphism originates from the need for professionalisation. For example, the potent influence of trade associations, educational institutes, training institutes or any other intermediary organisations on entrepreneurs, managers and employees to respond positively to environmental challenges by reducing pollution load of their firms.

These isomorphic pressures as drivers of environmental improvement in SMEs nevertheless remain underexplored in the context of developing economies, such as Pakistan. Moreover, insufficient attention has been paid to their distinctive institutional arrangements and their interactions with firm-level behaviours. Therefore, in order to deepen our understanding of this phenomenon, and to distinguish generic sustainability drivers from their more geographically-situated counterparts, there is a pressing need for more in-depth analysis of its emergence in developing economy contexts. In order to fill such gaps in the extant literature, guided by the aim and objectives of the study (Section 1.3), this chapter investigates the multilevel (micro-meso-macro) factors that exert isomorphic pressures on SMEs in Pakistan's leather industry to proactively adopt environmental practices.

As summarised in Figure 5.1, coercive, normative, and mimetic isomorphic pressures (DiMaggio and Powell, 1983), in conjunction, drive environmental sustainability in environmentally progressive and moderate leatherworking SMEs in Pakistan.



**Figure 5.1: Isomorphic pressures driving environmental improvement in environmentally progressive and moderate SMEs**



Source: Developed by the researcher.

These isomorphic pressures are simultaneously offered by the environmentally sensitive international customers (macro level), environmental regulations of export markets (macro level), intermediary organisations which are operating as (informal) compensatory institutional structures locally (meso level), peers who have successfully adopted cleaner production practices (meso level) and partly by the national regulatory authorities (macro level). However, some other effective micro-level factors also drive the environmentally progressive and moderate SMEs for environmental improvement. These are the sustainability-values of owner-managers, the attraction of financial benefits and desire to build a better image of the firm to be known as an eco-friendly producer/supplier.

It is, however, noteworthy that these multilevel (micro-meso-macro) environmental drivers, rather than operating as piecemeal factors, interact with each other and in tandem

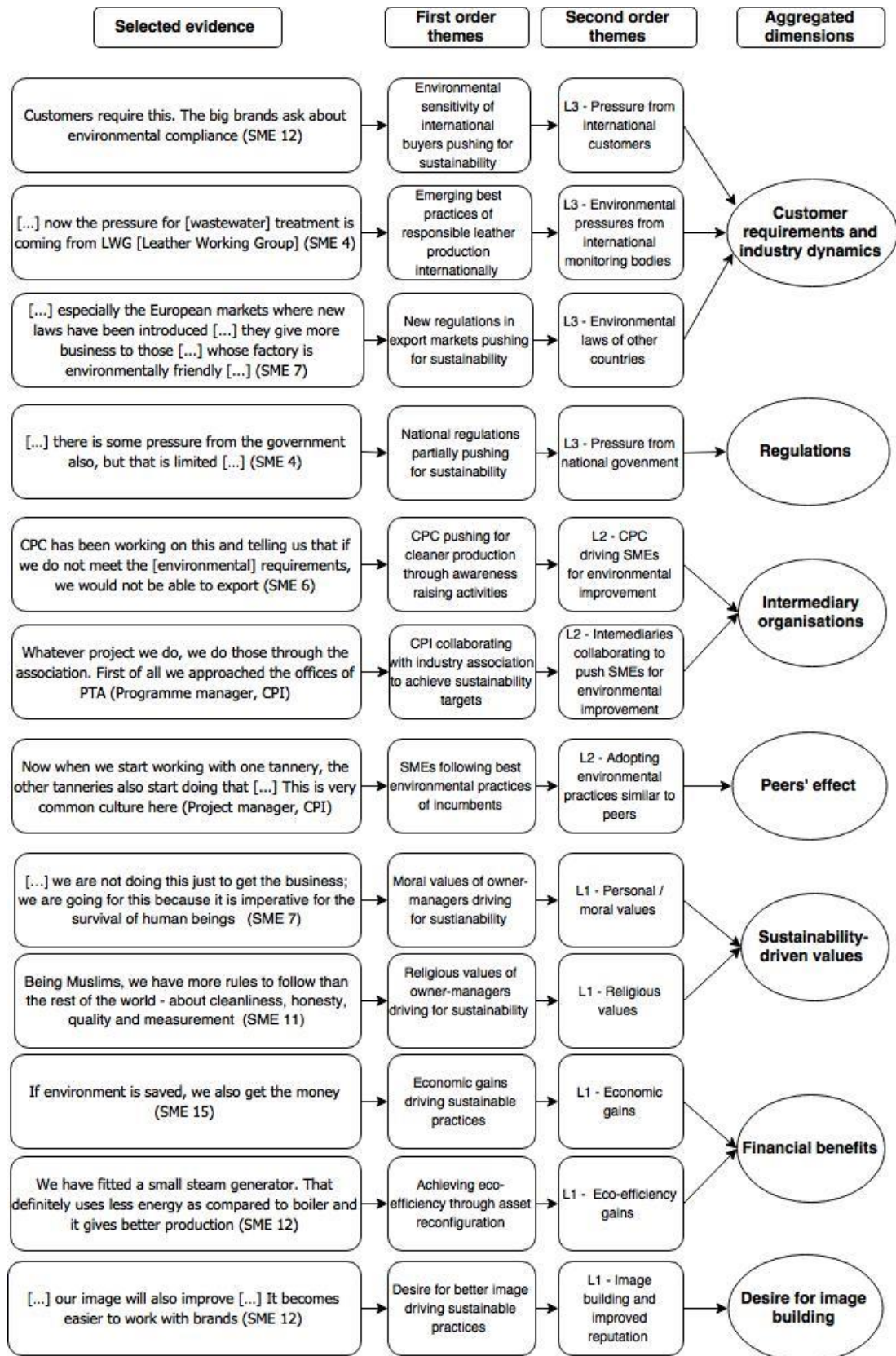
lead environmental sustainability in leatherworking SMEs. Moreover, operating in conjunction, these drivers make the business environment for leatherworking SMEs moderately dynamic (Eisenhardt and Martin, 2000).

The remainder of this chapter is structured in three sections. Section 5.2 presents an illustration of the 'data structure' (Gioia et al., 2013) showing the inductive process through which the multilevel (micro-meso-macro) environmental drivers have been identified. This Section also offers an illustration of the interactions between these drivers. Section 5.3 presents the comparative analysis of why environmentally progressive and moderate leatherworking SMEs adopt environmental practices. Finally, the chapter concludes with a summary in Section 5.4.

## **5.2 Identifying the multilevel factors driving environmental responsibility in environmentally progressive and moderate SMEs**

As is discussed earlier (Section 3.3.4(c)), after getting familiarised with the data in a first reading, the transcripts were re-read to draw initial concepts and develop a coding scheme. In the second round of data analysis, initial concepts were catalogued before developing consolidated themes in the third stage of analysis. At this stage, identified themes were classified as micro, meso and macro level environmental drivers. Micro level factors were labelled as L1, meso level as L2 and macro level as L3. Where found necessary, the themes were re-coded and re-catalogued. Finally, these were collated as shown in Figure 5.2.

**Figure 5.2: Data structure informing the identification of multilevel environmental drivers in environmentally progressive and moderate leatherworking SMEs**



Source: Developed by the researcher.

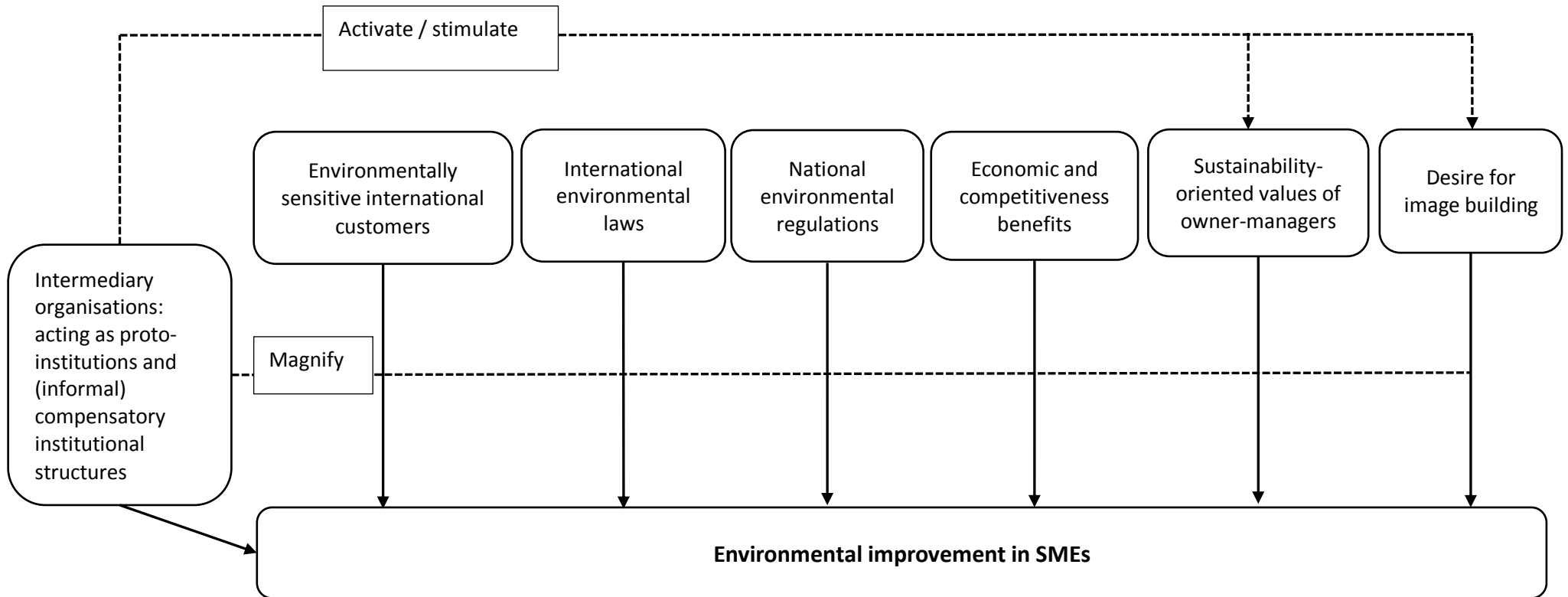
Macro level environmental drivers relate to the environmental demands from international customers, environmental regulations of export markets and national regulations (Figure 5.2). At the meso level, intermediary organisations push leatherworking firms to adopt cleaner production practices while peers offer mimetic pressures for them to become eco-friendly businesses (Figure 5.2). And the micro level environmental drivers are the sustainability values of owner-managers, the attraction of economic benefits and desire to build a good image of the firm (Figure 5.2).

It is, however, noteworthy that the international macro level drivers (environmental demands of international buyers and regulations of export markets) do not have any relevance for those SMEs operating only in the domestic market or not serving environmentally sensitive international buyers. Such firms are rather pushed for environmental improvement by some other environmental drivers situated locally, for instance, the intermediary organisations, and internally, like the sustainability-values of owner-managers and desire to achieve eco-efficiency.

It is also important to remind that in the case of environmentally distanced firms these were the economic imperatives and compliance (mainly with normative institutional forces – the management of effluent treatment plants) which pushed them to take a couple of environmental measures (Section 4.2.3). Thus, the other environmental drivers as identified in this chapter, such as customers' requirements and sustainability values of owner-managers, do not make any relevance to the environmentally distanced category of sample firms. The reasons for firms in this category for remaining environmentally distanced are already presented in the preceding chapter (Section 4.2.3).

The multilevel (micro-meso-macro) environmental drivers as identified in the case of environmentally progressive and moderate SMEs were seen not to have been operating as piecemeal factors. They rather interacted with each other while driving these firms to become environmentally responsible. Figure 5.3 captures the patterns of interactions between the identified multilevel environmental drivers. The figure shows that the meso level driver, intermediary organisations, not only directly push SMEs for environmental improvement, they also play a moderating role to magnify for SMEs the value of meeting the demands of environmentally sensitive buyers (macro level factor), complying with regulations (macro level factor) and becoming an eco-efficient business (micro level factor). They also activate/stimulate the sustainability values amongst SME owner-managers (micro level factor) and the desire to build a good image of their firms to be known as an environmentally responsible business (micro level factor). Thus, intermediary organisations have been successful in fostering environmental responsibility in SMEs and institutionalising cleaner production in the leather industry. More specifically, two environmental support institutes, Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) have been performing as the (informal) compensatory institutional structures (Kolk, 2014) offering normative institutional pressures (DiMaggio and Powell, 1983) for SMEs to behave environmentally responsibly. They have been compensating for the lack or low effectiveness of coercive institutional pressures caused by the institutional 'gaps' in the country (Kolk, 2014; Ortolano et al., 2014). As a reminder, the concept of institutional 'gaps' refers to scenarios where formal institutions are in place but are not effective enough to perform their functions sufficiently (Littlewood and Holt, 2015b; Kolk, 2014).

**Figure 5.3: Interactions between multilevel environmental drivers**



Source: Developed by the researcher.

The cleaner production centres have also been performing a 'proto-institutional' role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) by collaborating with leatherworking SMEs and magnifying the value they perceive in becoming green while also stimulating the sustainability values amongst the SME owner-managers. This research thus contributes to knowledge by highlighting the value of proto-institutional forces and (informal) compensatory institutional structures (Kolk, 2014) for better environmental engagement of SMEs in a developing economy context, Pakistan, where formal institutional mechanisms are seen to have been less effective and supportive. The results also point to the value of social capital and relational approaches (Blundel et al., 2013; Spence et al., 2011; Fuller and Tian, 2006; Nahapiet and Ghoshal, 1998) for advancing environmentally responsible behaviour in SMEs. The study thus suggests that SMEs seeking environmental improvement need to advance their networking and alliance formation capabilities for collaborating with other institutional actors in their organisational field for effectively responding to the emerging challenges of environmental degradation.

The next Section (5.3) of this chapter presents detailed comparative findings about environmental drivers within the categories of environmentally progressive and moderate SMEs.

### **5.3 Why environmentally progressive and moderate SMEs adopt environmental practices?**

A number of multilevel factors (micro-meso-macro) drive the environmentally progressive and moderate leatherworking SMEs to adopt environmental practices. These include the environmental requirements of international buyers, new industry standards and practices,

pressures from regulatory authorities and intermediary organisations, sustainability values of owner-managers, the attraction of financial gains and desire for improved image (Figure 5.2 and Figure 5.3).

### **5.3.1 Customers' requirements and industry dynamics**

The environmentally sensitive international buyers and ever increasing environmental requirements/regulations of foreign countries acted as the macro level coercive institutional forces (DiMaggio and Powell, 1983) for the export-oriented environmentally progressive and moderate SMEs, pushing them to adopt eco-friendly practices. More specifically, such pressures were coming from the European region. As noted earlier (Section 1.5), the European markets were the most sensitive environmentally, with strict environmental regulations in place. Environmentally highly aware buyers from these markets were, therefore, pushing their Pakistani suppliers to adopt cleaner production processes.

Every environmentally progressive firm was serving customers internationally. For example, SME 4 was selling its products to German buyers, SME 13 was serving customers in Italy, Hong Kong and Korea, SME 15 had buyers in the UK, Belgium, Germany and France and SME 19 was exporting to Italy. Their international buyers were pushing them to stop using harmful chemicals in their production processes and also take other pollution prevention and pollution control measures for protecting the wider natural environment. For instance, the respondent from SME 4 asserted that these were '*the brands that pressurise*' them to take environmental measures. Similarly, owner-manager of SME 15, another environmentally progressive firm, said:



*'The demands, the requirements and the testing levels are tough. It is very important to match their requirements [...] Now we are getting the BSC audit, Business Social Compliance, of our tannery. That is the demand from our German customers [...] if we meet their standards and requirements then we get the business [...] their concerns are that we are not using child labour, not damaging the environment and not using any harmful chemicals in the product' (SME 15).*

Just like environmentally progressive SMEs, some of the environmentally moderate firms, namely; SME 2, SME 5, SME 8, SME 9, SME 14, SME 18 and SME 20, were also serving customers in the European region. So they were also facing similar kind of pressures from international buyers to take environmental measures as their environmentally progressive peers were facing<sup>14</sup>. For instance, the owner-manager of SME 9, an export-oriented, environmentally moderate firm, which was serving customers in the Europe region asserted that it was due to the requirements of their buyers that they started to use less harmful chemicals:

*'[...] we need to meet the requirements of European customers. We need to carefully use the chemicals in order to meet the requirements of customers [...]' (SME 9).*

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<sup>14</sup> Those environmentally moderate SMEs which were not exporting, or even if they were exporting they were not selling in environmentally sensitive international markets such as the Middle East, they were not led for environmental improvement by the environmental demands from customers. Some other factors such as the intermediary organisations, sustainability-values of owner-managers and attraction of economic benefits were driving them for becoming eco-friendly businesses (For details see Sections 5.3.3, 5.3.4 and 5.3.5).

Similarly, owner-managers of SME 14 and SME 18, two of the environmentally moderate firms, also regarded the environmental requirements of international buyers a leading driver of environmental improvement for them.

*‘Their requirements are about complying with REACH. So accordingly we process leather for them [...] the European customers, they require this thing [...] if the harmful elements are removed only then the articles can be sold’ (SME 14).*

*‘[...] our customers have started to ask about REACH certificate and we have that [...] for the export business, it is a must [...] without it you are not going to do the export business’ (SME 18).*

Tanneries use a number of different chemicals for processing leather. Of these, some are regarded as carcinogenic, such as chrome, and their use is banned. In order to confirm that the suppliers were not using the harmful chemicals, many international customers were now asking for the lab reports approving that the processed leather would not cause any harm to its users. Thus, it seemed that in order to satisfy their customers, by pursuing what might be called an acquiescence strategy<sup>15</sup> (Oliver, 1991) and drawing on their pollution prevention and product stewardship capabilities (Hart, 1995) (Chapter 6), export-oriented, environmentally progressive and moderate SMEs, particularly those which were selling in the European markets, had established responsible supply chains (Gold et al., 2010) for accessing and using environmentally less harmful chemicals. Across the industry, such

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<sup>15</sup> Acquiescence strategy refers to those actions/measures of firms that they take unconsciously or blindly while adhering to preconscious or taken-for-granted rules or values in an institutional environment (Oliver, 1991).

inputs were known as REACH compliant chemicals. The following evidence from some export-oriented SMEs reinforce these findings.

*'[...] the chemicals that we use are 99.99 percent REACH certified – European compliance. We use German, Italian and Spanish chemicals. We would not go for any other chemicals [...] we have even asked our clients, confidently, to visit us whenever they want to audit for the use of chemicals [...]' (SME 5).*

*'They ask certificates for each and everything they buy from us. They keep introducing the new requirements. For example, REACH. Earlier, there were some other requirements about Chrome VI and some other chemicals [...] now they have introduced the complete system of REACH' (SME 11).*

*'[...] if Chrome VI is detected [...] or some other prohibited elements are detected, they will not buy [...] things are being implemented on us [...] it is coming from the top. It is coming as a trickle-down effect. It is coming to us from the customers' (SME 16).*

The above evidence refers the presence of 'green multiplier' effect (Holt, 2004, p. 79) in Pakistan's leather industry in that the environmental requirements of customers also engage other supply chains actors such as the chemical suppliers to consider embedding environmental responsibility in their practices and produce inputs according to the needs of leather producers.

The prevalence of customer requirements as a leading environmental driver for the export-oriented, environmentally progressive and moderate SMEs was also observed by some other institutional actors in the industry, such as the Cleaner Production Centre (CPC), Cleaner Production Institute (CPI) and input suppliers. For instance, as the following evidence shows.

*'Their buyers also had their requirements. So, they were to adopt these things anyway [...] the export-oriented tanneries adopted the new processes more' (Programme manager, CPI).*

*'[...] the most effective pressure group is the customer. If the customer asks for certain requirements, people are ready to make changes over night' (Project manager, CPC).*

*'Everything is customer led [...] European and American customers, having environmental awareness, are demanding environmental compliance' (CC1).*

European markets were seen to not only have environmentally conscious customers, the environmental regulations of these countries were also regarded to be strict and becoming more rigorous over time: *'[...] particularly for the exports, the European regulations or if you are exporting to the USA they also have a law, the law of California [...] those have become stringent [...]'* (SME 16). The owner-manager of SME2, an environmentally moderate firm, asserted that the European regulations were strict because those governments were much considerate towards the health and safety of their public: *'[...] for their public so that they do not have the skin problems or cancer or their environment is not polluted. Their main concern is that human life should not face any danger'* (SME 2). It

suggests that some international regulatory forces were offering coercive isomorphic pressures (DiMaggio and Powell, 1983) for the Pakistani leatherworking SMEs to adopt eco-friendly practices. The following evidence from SME 7, an environmentally moderate firm, summarises it well.

*'Look, our international market, especially the European market where new laws have been introduced, they give more business to those who work on these things, whose factory is environmentally friendly and does not drain poisonous water, and does not cause land or air pollution [...]'* (SME 7).

The above findings confirm that environmental compliance was seen to have become a basic requirement for exporting leather and leather products. Non-compliance with international environmental standards could result in the rejection of a whole order: *'[...] the European customers, they require this [...] if the harmful elements are removed only then the articles can be sold'* (SME 14).

There were also some other international institutional actors that were seen to have been setting the patterns of industry dynamics by offering the normative pressure (DiMaggio and Powell, 1983) for the export-oriented leatherworking SMEs to behave environmentally responsibly. For example, the Leather Working Group (LWG), an international multiple stakeholder group and monitoring body, was told to have been working to promote environmentally friendly business practices across tanneries worldwide. LWG offers guidelines for continued environmental improvement and gives awards to confirm that a tannery is environmentally compliant. Tanneries that consider themselves more advanced environmentally, such as environmentally progressive SMEs in this study, strive to win such

awards in order to attract more business from international customers. For example, as the respondent from SME 4, an environmentally progressive firm, said:

*'[...] now the pressure for [wastewater] treatment is coming from LWG [Leather Working Group] [...] If the [wastewater treatment] plant is not there, the values cannot be met and the LWG medal would not be awarded [...] Any tannery that aims to export will have to adopt this [...]' (SME 4).*

Getting awards, such as LWG, might also be considered an attempt of progressive firms to develop symbolic capital (Section 2.3.2), which Fuller and Tian (2006) suggest is one reason why SMEs aim for winning the environmental awards. In fact, symbolic capital can enable firms to build a good reputation and therefore attract more customers (for details see Section 5.3.6).

Findings presented above suggest that various international actors, including customers, regulatory authorities and industry monitoring bodies, directly push Pakistan's leatherworking SMEs to adopt environmental practices. However, there were also some other meso level mediating forces which indirectly exposed these firms to the environmental requirements of export markets and motivated them to meet those. In this regard, the role of intermediary organisations, such as the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), was seen to be crucial. Both these environmental support institutes had been actively helping SMEs realise the value of meeting environmental requirements of international customers. And this generated some normative pressure for these firms to meet the environmental standards of international markets. Thus, the respondents from CPC and CPI narrated how they had been motivating

leatherworking SMEs to meet the international environmental standards and customer requirements by magnifying them their economic value.

*'We convinced them by saying that if you comply with the environment, on the one hand, you would conserve your resources, you would be able to save chemicals and water, and second if you export you would be able to comply with their requirements' (Programme manager, CPI).*

*'We [...] make them understand that if you tell the world that you are environmentally compliant, you can ask for some extra money [...]' (Project manager, CPC).*

In summary, findings about the environmental requirements of international customers, international regulations and emerging industry standards internationally as drivers of environmental improvement show that these factors offer environmental opportunities for environmentally progressive and moderate leatherworking SMEs, for example, in the form of increasing number of environmentally sensitive international buyers. Moreover, the multilevel factors such as the environmentally conscious international customers (macro), environmental regulations of export markets (macro), internationally emerging best environmental standards, practices and procedures like the Leather Working Group (LWG) medals (macro), and intermediary organisations (meso) interact with each other to drive environmental sustainability in these firms. It implies that the field cohesion, which refers to 'the intensity and density of formal and informal network ties between constituents in an organizational field' (Bansal and Roth, 2000, p. 730), international exposure (Bansal, 2005) and desire for sustaining in global supply chains (Sarkis et al., 2011), in conjunction,

drive environmental sustainability in environmentally progressive and moderate SMEs. However, the frequency with which these environmental drivers push leatherworking SMEs to adopt eco-friendly practices makes the business environment for these firms moderately dynamic rather than a high velocity-market (Eisenhardt and Martin, 2000; Teece et al., 1997). It is because the new standards and practices do not evolve abruptly in the leather industry, unlike some other technology-led industry sectors, such as IT industry, which are regarded highly volatile markets due to innovations happening at a faster pace in these industries.

### 5.3.2 Regulations

Another macro level environmental driver was the compliance with national environmental regulations. However, every environmentally progressive and moderate SME did not perceive it a driver of environmental improvement for them. Even those who regarded it an environmental driver for them, they did not see it as a leading factor but to have only a very limited influence on their environmental engagement. For instance, as respondents from two of the environmentally progressive firms, SME 4 and SME 13, said:

*'[...] there is some pressure from the government also. But that is limited [...]' (SME 4).*

*'I think, the leading factor is education. After that, it is the government' (SME 13).*

Similarly, environmentally moderate SMEs were not seen to have been primarily led by compliance for adopting cleaner production practices. For example, as owner-managers of two of these firms, SME 9 and SME 12, stated:



*'We are facing some pressure for environmental improvement from the government and also from the international market [...]' (SME 9).*

*'Government asks about it and in many cases customers also require it. So you can say it is fifty-fifty [...] [t]hat institution [CPI] is very effective. But the government is not effective [...]' (SME 12).*

Even the representatives of environmental support institutes, CPC and CPI, who had the experience of guiding many leatherworking SMEs to adopt environmental practices asserted that they did not observe compliance as an effective driver of environmental improvement amongst these firms. For instance, as the project manager from CPI said:

*'[...] I do not think there has been any pressure from the government [...] it is only on the occasional basis that the government may wake up for few days and pressurise [...]' (Project manager, CPI).*

Taken together, the above findings from partly compliance-driven, environmentally progressive and moderate SMEs and intermediary organisations suggest that the formal regulatory institutions in Pakistan do not offer much effective coercive isomorphic pressures for the firms to behave environmentally responsibly. These findings contradict some earlier studies, which describe national regulations as a leading force exerting strong coercive isomorphic pressure on SMEs to become environmentally responsible (Revell et al., 2010; Studer et al., 2006).

There were various reasons for compliance to have remained a less effective environmental driver in Pakistan's leather industry sector<sup>16</sup>. The major ones were seen as

(a) The complexity inherent in the environmental regulations:

*'Look, the thing is that too many things [regulations] are imposed on us [...] These are not realistic [...] some bureaucrat has implemented the system of a high industry of Switzerland or Germany [...]' (SME 19),*

(b) Their weaker enforcement:

*'[...] there should be some strictness from the government. There should be some rules and regulations [...] the implementation of regulations is weak here [...]' (SME 20),*

(c) The limited interest of the national government in addressing environmental degradation:

*'[...] it is only on the occasional basis that government may wake up for few days and pressurise the industrialists [...]' (Programme manager, CPI).*

The weaker formal institutional set ups in the country were perceived to have been providing an opportunity to some non-compliant firms to escape from serious penalties, as had also been found for SMEs in India where the enforcement of environmental regulations

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<sup>16</sup> More detailed discussion on the reasons for regulations to have been operating as less of an environmental driver and more like a barrier are presented in Chapter 7.

remained weak because of the limited resources allocated to regulatory bodies and also SMEs bribing poorly paid environmental inspectors (Studer et al., 2005). Although in isolated instances, the non-compliant attitude of competitors, who were saving costs through non-compliance, was also deterring some other SMEs from complying with regulations. It was, however, found that in the recent past in some areas, more specifically in the Sialkot region, government officials had become somewhat active and were pushing firm owners to adopt cleaner production practices. For instance, as one of the owner-managers of environmentally progressive firms, SME 15, said:

*'[...] there is pressure on the government from Norway and Finland about controlling the pollution because they are environment concerning countries. So, the government has sent notices to everyone [to comply]' (SME 15).*

Similarly, one of the owner-managers from environmentally moderate firms, SME 14, for instance, asserted:

*'It is about 4 to 5 years now that the Department of Environment has become stricter [...] [therefore] at the moment, everyone is trying [for environmental improvement] because there is pressure from the government, from the Department of Environment' (SME 14).*

At the same time, intermediary organisations such as the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) were also seen to have been pushing SMEs to adopt environmental practices, motivating them that it could enable them to comply. For instance, the project manager of CPI said:

*'[...] the environmental law had been newly introduced in Pakistan at that time. So, we told them that [by adopting environmental practices] they would be able to comply with the law [...]' (Project manager, CPI).*

These findings imply that it was not only the formal institutions that had become somewhat more active in the recent past in providing some coercive institutional pressure for pushing SMEs to adopt environmental practices. Intermediary organisations, operating as (informal) compensatory institutional structures (Kolk, 2014), were also acting as normative institutional forces driving the firms to comply. Thus the collective push from the macro and meso level environmental drivers was seen to have been leading environmental improvement in leatherworking SMEs.

Nevertheless, consistent with the recent evidence from some other less developed countries, such as South Africa (Hamann et al., 2015), this study reveals that although the enforcement of environmental regulations is weak in Pakistan that does not mean the non-existence of environmental legislation (Section 1.5). Regulations are there but weakly enforced. In a way these findings reinforce the argument of Kolk (2014) who offers a distinction between institutional 'voids' and 'gaps' in that institutional 'voids' refer to a situation of non-existence of institutional forces/arrangements whereas institutional 'gaps' refer to the presence of some institutes but not operating as effectively as they should be. However, given the less effective formal institutional mechanisms in Pakistan, compared to many developed economies where regulations are not only made but are also enforced strictly (e.g. Revell et al., 2010; Masurel, 2007; Williamson et al., 2006), formal compliance does not appear to be serving as an effective environmental driver for leatherworking SMEs.

For leading SMEs towards environmental improvement successfully, it looks more appealing to seek support from a set of complementary environmental drivers, such as the support services of intermediary organisations (Section 5.3.3) and sustainability-values of owner-managers (Section 5.3.4) rather than just relying on regulations, which have not served as an effective environmental driver generally.

### **5.3.3 Intermediary organisations**

Every environmentally progressive and moderate firm attributed its adoption of environmental practices to a large extent to the motivational, awareness raising and capacity building interventions of intermediary organisations. In the absence of effective formal institutional mechanisms in the country, intermediary organisations, operating at the meso level, acted as the (informal) compensatory institutional structures (Kolk, 2014): *‘That institution [CPI] is very effective. But the government is not effective [...]’ (SME 12).* They offered the normative isomorphic pressure (DiMaggio and Powell, 1983) for leatherworking SMEs to reduce their environmental footprints. They thus compensated for the lacked coercive institutional pressures for driving leatherworking firms for environmental improvement. They also performed a ‘proto-institutional’ role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) fostering pro-environmental practices in SMEs by collaborating with them, directly as well as through the industry associations (Ortolano et al., 2014). Through their interventions, such as the environmental awareness raising campaigns and, capacity building measures for the development of human resources, the intermediaries, more specifically the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), pushed the firms to take

environmental protection measures and successfully institutionalised the cleaner production practices in the leather industry.

Environmental interventions from the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) were seen to have changed the environmental orientation of many leatherworking SMEs while also pushing them to behave environmentally responsibly. These institutes had been motivating SME owners, managers and employees to control the indiscriminate discharge of potentially harmful solid wastes and heavily polluted wastewater by adopting cleaner production techniques. Such techniques, when adopted, had the potential to help SMEs to comply with the environmental regulations, meet their customers' environmental demands and simultaneously achieve eco-efficiency (Ortolano et al., 2014; van Berkel, 2007). For instance, the owner-manager of SME 13, one of the environmentally progressive firms, talked about intermediary organisations as an effective driver of environmental improvement for them.

*'NEC [now CPI] provided us with all guidance about this [...] management of treatment plant, KTWMA [Kasur Tannery Waste Management Authority], and NEC these both have raised good awareness [...]' (SME 13).*

Talking on the same topic, owner-managers of environmentally moderate firms also affirmed intermediary organisations as an effective and leading driver of environmental improvement for them. For instance, from this category of firms, owner-managers of SME 6, SME 8 and SME 20 said, respectively.

*'[...] CPC is a very good institute regarding leather and they tell us everything about environment. Initially, courses were arranged on*

*a monthly basis with trainers coming from abroad. They used to do experiments here for showing us in order to develop our better understanding. Then they used to conduct tests and exams. They also used to visit our units' (SME 6).*

*'After every two to three months, they [CPC] used to arrange the trainings and lectures to explain how the processes should be changed for betterment, particularly about the environment' (SME 8).*

*'[...] PTA started a programme in collaboration with an environment consultant firm [...] they used to make visits tannery to tannery and also invited us on different seminars [...] about conservation and safety [...] there is another institute NILT [National Institute of Leather Technology], they arranged a number of seminars [...] they used to tell us [...] about using environmentally friendly chemicals, using less float [...] doing closed door washing, things like that' (SME 20).*

The project manager from Cleaner Production Centre (CPC) also confirmed that they intervened into the industry for leading SMEs towards the adoption of eco-friendly production practices. He said:

*'We made them realise that they were causing diseases [...] people gradually started to get convinced. It was like we regularly used to knock at their doors and at times invite them for training sessions [...] whenever we start, we start from good housekeeping and try to*

*motivate people that they would not be required to spend a lot of money and by making minor investments they could save themselves from major [environmental] problems' (Project manager, CPC).*

Nevertheless, it was not easy for the environment support institutes to bring an attitudinal change in SME owner-managers. The institutes faced a lot of resistance from them. They, however, tried to overcome such barriers by promoting the economic value of becoming an eco-friendly business to SME owner-managers. For instance, as the programme manager from CPI narrated:

*'[...] we really had to struggle hard to motivate them. Mostly, we convinced them that they would conserve their resources. They were more interested in this, that they would have some economic benefits. So, we kept this factor in mind while motivating them' (Programme manager, CPI).*

The intermediary organisations also arranged inter-firm visits, which were considered an influential tool to encourage SME owner-managers to adopt environmental practices. For instance as the owner-manager of SME 14, an environmentally moderate firm, said: *'They had formed groups and my group worked on energy conservation [...]' (SME 14).* The philosophy behind organising such visits was to establish a network of environmentally proactive SME owner-managers and provide them with an opportunity to share success stories as well as learn from each other's failures. This can be considered an instance of developing 'field cohesion' within the leather industry, which relates to 'the intensity and density of formal and informal network ties between constituents in an organizational field'



(Bansal and Roth, 2000, p. 730). From another perspective, environmentally engaged peers acted as the normative institutional forces driving some other firms, which were lagging environmentally, towards achieving better environmental performance. These findings also suggest the presence of mimetic isomorphic behaviour (DiMaggio and Powell, 1983) in some SMEs. As they see others successfully adopting cleaner production practices, they model themselves after them. The words of a programme manager of CPI also speak to the presence of mimetic isomorphism for environmental improvement in leatherworking SMEs.

*'Now when we start working with one tannery, the other tanneries also start doing that after seeing that the other tannery is doing something new. This is a very common culture here that if you introduce some new process in one industry, the rest would also start adopting that. So, when we started working in four or five tanneries, all of them started to come to us' (Programme manager, CPI).*

Clearly, in contrast to the evidence from some other developing countries where the activism of intermediary organisations in promoting environmental sustainability in SMEs has been reported as limited (e.g. Hamann et al., 2015), findings from Pakistan suggest that cleaner production centres and industry associations seek to push and support leatherworking SMEs for taking environmentally responsible measures. They make them realise the salience of the issue of environmental degradation, share with them environmental knowledge, make supply chain pressures more salient in their minds and enable them to adopt cleaner production processes through trainings and workshops. Intermediaries create further normative and mimetic isomorphic pressures (Bansal, 2005;

DiMaggio and Powell, 1983) by forming small working groups to establish networks, which provide an opportunity for entrepreneurs to observe successful implementation of cleaner production processes in other firms and legitimise their own business behaviour while also developing the feeling of being a modern tannery. This is a further means of institutionalising cleaner production in the industry.

The active presence of environment support institutes (CPC and CPI) depended on the continued support from national and regional industrial associations such as the Pakistan Tanners Association (PTA) and Pakistan Gloves Manufacturers and Exporters Association (PGMEA). Referring to the key role of collaborations with PTA, for example, a programme manager from Cleaner Production Institute (CPI) stated that:

*'Whatever project we do, we do those through the association [...] we involve them and tell them about the project [...] Then they tell us about three or four tanneries to start our activities with [...] tanneries which are progressive because they understand these things they show interest and invite us to start our activities [...]'*  
*(Programme manager, CPI).*

Findings regarding the active role of intermediary organisations in achieving environmental goals lend support to the stream of literature which refers to the success of environment support programmes in developing pro-environmental behaviour of SMEs in a number of European countries (Klewitz et al., 2012; York and Venkataraman, 2010; Pimenova and van der Vorst, 2004; Bruijn and Lulofs, 2001). However, in contrast with the European context where national governments have been backing and financially supporting most of the environmental programmes, the environmental interventions in Pakistan have not been

mainly funded by the national government, but by some international sponsors (Ortolano et al., 2014), such as the Dutch and Norwegian governments, as the following evidence illustrates:

*'The Dutch government funded our project on tanneries [...] Almost all our major projects are with the Dutch government. The Netherland Embassy in Islamabad has been providing funding for all these' (Programme manager, CPI).*

*'[...] one is Norwegian, the other one is Dutch, and as I have told you, now we are going to have a grant from GEF, Global Environment Facility [...]' (Project manager, CPC).*

Given that external funding streams are time-limited, these initiatives will also require ongoing support from the Pakistani government so that the sustainability benefits gained during the earlier phases of these programmes are not lost. Nevertheless, the collaborations between the intermediary organisations and international sponsors show that these organisations have not been acting as a piecemeal environmental driver. The meso level institutions, CPC and CPI, interacted with the macro level sponsors, the Dutch and Norwegian governments, and casted their impact at the micro level by acting as normative institutional forces (DiMaggio and Powell, 1983), and performing a proto-institutional role fostering environmental sustainability in environmentally progressive and moderate SMEs. These findings show how in Pakistan's leather industry environmental drivers do not operate in isolation but interact with each other to push SMEs to become more environmentally responsible businesses (Hamann et al., 2015; Muñoz and Dimov, 2015; Sarkis et al., 2011).

#### 5.3.4 Sustainability-driven values

In SMEs, it is hard to isolate the influence of moral values of entrepreneurs from the vision and/or mission of their enterprises (Hamann et al., 2015; Williams and Schaefer, 2013; Battisti and Perry, 2011; Collins et al., 2007). There was substantial evidence of this in the case of Pakistan's leather industry. Operating at the micro level, sustainability-values of owner-managers served as one of the leading factors driving environmentally progressive and moderate SMEs to adopt environmental practices.

Within the category of environmentally progressive SMEs, every firm offered sufficient evidence that its owner-manager was much considerate towards protecting the wider natural environment and this led the firm to take environmental measures proactively. For instance, as three of the owner-managers, SME 4, SME 13 and SME 15, respectively said:

*'[...] particularly in our case [...] these are the moral values that drive us that it should be done [...] largely these are the moral values [...]'*  
(SME 4).

*'Look, we should think like this that we are to stay here and our children are also to stay here. So, if we generate pollution through our business that will be harmful' (SME 13).*

*'[...] we should address these issues permanently. It will benefit us as well as people in the surroundings. I should be conscious that my neighbours do not get disturbed because of my business activities [...]' (SME 15).*

While the above evidence refers to the presence of environmental stewardship in SME owner-managers, it also reflects their long-term orientation towards addressing the environmental issues. They were not just concerned about protecting the mother earth for the current generation of human beings, but also for the ones to come in the future.

Just like environmentally progressive SMEs, the majority of environmentally moderate firms was also led by the sustainability-values of their owner-managers for adopting environmental practices. The owner-managers in this category of SMEs thus displayed concerns for protecting the wider natural environment, which were perceived to have been a driving force for them to run their businesses responsibly. For instance, two of the owner-managers of environmentally moderate firms, SME 7 and SME 13, stated:

*'[...] we are not doing this just to get the business; we are going for this because it is imperative for the survival of human beings. It is important to save our children from pollution [...] As a human, it is my duty towards others. I have come here to live say for 40, 50 or 60 years. An individual comes here as a guest, he does not know, but if he keeps himself safe and also keeps others safe, for having good health and also for the health of the children it is important'* (SME 7).

*'It is our duty to adopt a new process and think that the future generation will get benefit from this and it will also benefit us [...] our ancestors did not stay here forever. We will not stay here forever either [...] if we do something good today, our future generations will benefit from that tomorrow [...] We should think about the*

*future generations [...] We think that better should be achieved [...] It should not matter to us what our neighbours do and what they do not do. We should make our contribution [...] this is our thinking [...]' (SME 11).*

Some other respondents from the category of environmentally moderate SMEs also asserted that *'Humanity is our priority'* (SME 9) and they would *'[...] have to protect the mother earth if [they were] to live on it'* (SME 16). It implies that similar to environmentally progressive firms, owner-managers of environmentally moderate SMEs also considered it their liability to protect the planet so that they could play a positive role in providing a better place for fellow human beings and future generations to live.

On investigating how the sustainability values were activated amongst the SME owner-managers, it was found that the intermediary organisations, particularly the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) had played a key role in activating these values. It suggests that the meso- and micro-level factors interacted to advance environmental stewardship in the owner-managers of environmentally progressive and moderate SMEs. For instance, as the owner-manager of SME 13, an environmentally progressive firm, asserted that:

*'NEC [now CPI] provided us with all guidance about this [...] management of treatment plant, KTWMA [Kasur Tannery Waste Management Authority], and NEC these both have raised good awareness [...]' (SME 13).*

Similarly, from the category of environmentally moderate firms, owner-manager of SME 6, for instance, described that it was through their interaction with the Cleaner Production Centre (CPC) that they realised the need for activating environmental stewardship.

*‘Before getting training from CPC, we did not used to use water carefully [...] When CPC educated us about the water and energy conservation, and about using measured water, which is a proper system, we felt that there is something good in that’ (SME 6).*

Likewise, owner-manager of another environmentally moderate firm, SME 8 asserted that these were the educational and awareness raising interventions of the CPC which advanced environmental stewardship in him.

*‘They [CPC] used to arrange different workshops, which I liked the most. After every two to three months, they used to arrange the trainings and lectures to explain how the processes should be changed for betterment, particularly about the environment’ (SME 8).*

This was also confirmed by the project manager from CPC, who asserted that:

*‘[...] these people did this when we motivated them to do. We made them realise that they were causing diseases [...] people gradually started to get convinced. It was like we regularly used to knock at their doors and at times used to invite them for training sessions, and at times we used to visit them personally [...]’ (Project manager, CPC).*

While respondents from the majority of environmentally progressive and moderate SMEs referred to the mediating role of environmental support institutes in activating pro-environmental values amongst them, some of these also mentioned about their real life observations regarding the miseries human beings could face due to pollution, such as health issues including stomach and breathing diseases: *'We are much concerned about the [health and safety of a] person, who is working in the factory, and not just about the production of leather. If he is healthy and fresh he would work better. Otherwise, if he is working in the smoke, after half an hour we would come out for washing the face to become fresh and breath. So, it is better that we also take care of him. Being a factory owner or being a material owner, I should not be only concerned with my own pocket'* (SME 5 – environmentally moderate firm), and limited access to clean drinking water: *'Look; regarding the environment, whatever business you do you should not damage the environment around you. By the end of the day, you will also have to face its reaction. If I am adding to pollution, my kids will also drink the same polluted water. That will contaminate the vegetables and crops. The pollution that I will spread will turn back to my home'* (SME 15 – environmentally progressive firm) as other factors underpinning the activation of environmental stewardship amongst them. However, only one respondent from an environmentally moderate firm, SME 11, referred to the religious convictions informing his sustainability values:

*'First of all, we are Muslims. Being Muslims, we have more rules to follow than the rest of the world - about cleanliness, honesty, quality and measurement. We are different from others because this is what our religion teaches us'* (SME 11).



Pakistan is an Islamic country, and many people attach significant value to religious convictions in almost all spheres of their lives. Religious values were therefore expected to have played a role in the development of sustainability values of SME owners and managers. However, respondents made very little reference to religion as a driver of sustainability values. These findings are in contrast with some earlier studies which argue for religious values as a potentially powerful driver of environmental engagement of SMEs (e.g. Abdelzaher and Abdelzaher, 2015; Vives, 2006). Notably, these findings should be considered with caution because the researcher did not explicitly explore the influence of religion on environmental behaviour of SMEs. Findings could be different with a religion focused discussion. However, this study finds that sustainability driven owner-managers do 'recognise equanimity between 'self' and 'other', where 'other' includes other people and nonhuman nature' (Parrish, 2010, p. 520).

In summary, findings of this subsection show that sustainability-values of owner-managers serve as one of the effective drivers of environmental improvement in both environmentally progressive and moderate SMEs. Analysis of the mechanisms that underpin the advancement of environmental stewardship amongst SME owner-managers confirms that the activation of sustainability values is not an internal phenomenon to these firm. It is rather an interaction between the micro (SME owner-managers) and meso level factors (intermediary organisations) that activates the environmental values amongst SME owner-managers.

### **5.3.5 Financial benefits**

Another micro level factor that drove the environmentally progressive and moderate SMEs to adopt environmental practices proactively was the attraction of economic and

competitiveness benefits. Respondents from these two categories of sample firms asserted that they were much keen to control the input intensity of their production processes for achieving eco-efficiency (van Berkel, 2007), And this was seen as a means to address the environmental issues while also controlling the rising costs of production. Thus they were driven by the competitiveness logic to become green in that they were taking environmental measures in order to save the resources and achieve eco-efficiency for exploiting the economic benefits attached to the sustainability measures (Bansal and Roth, 2000).

For instance, respondent from SME 4, an environmentally progressive firm which had taken a number of pollution prevention measures to control the input intensity of its process such as using better quality chemicals and adopting water conservation practices (as noted earlier in Table 4.2), asserted that for them the economic logic was one of the leading drivers that underpinned the adoption of such practices.

*'[...] costs are rising and process efficiency would have to be improved [...]. You may consider this one of the main reasons' (SME 4).*

Similarly, all other environmentally progressive firms were also led by the economic rationale for taking measures to reduce their environmental footprints. For instance, as the owner-managers of SME 13 and SME 15 respectively said:

*'Colour coating machine is more environmentally friendly compared to a spraying plant because it does not spread fumes in the air [...] it saves a lot of colour as well' (SME 13).*

*'[...] a lot of chemical is saved [through cleaner production practices]. If environment is saved, we also get the money' (SME 15).*

Just like environmentally progressive firms, environmentally moderate SMEs were also seen to have been largely driven by the attraction of economic benefits of taking environmental measures. For instance, as the owner-manager of SME 16 asserted:

*'[...] we have to keep the pace [of the process] at which the leather exhausts chemicals completely. That is also better for us because we have to reduce the cost [...] that is good not only for us but also for the environment [...] we want minimum wastage of dyes [...]'* (SME 16).

To offer some additional evidence from other environmentally moderate cases, owner-managers of SME 5 and SME 12, for instance, mentioned about substituting their inputs/resources for exploiting the economic benefits while also reducing their environmental footprints.

*'There are disadvantages in using wood [for boiler]. First, it damages the environment. Second, the working environment of the factory gets upset due to smoke. Third, the quality that can be produced with the heat of gas or LPG that cannot be achieved with that [wood-run boiler]. We have therefore searched a second hand Korean boiler, an industrial boiler. We run it on LPG. That does not generate smoke or cause any other issues. Also, our cost of production has decreased because it trips according to the set temperature [...]'* (SME 5).

*'[...] we have developed a system in which we do not have to make extensive use of the boiler. We have fitted a small steam generator. That definitely uses less energy compared to the boiler and it gives better production. This also results in the lesser use of gas' (SME 12).*

Thus, simultaneous persuasion of the economic and ecological benefits was driving environmentally progressive and moderate SMEs to adopt cleaner production practices.

These findings imply that firms operating in the two categories follow the dual principles of sustainable entrepreneurship i.e. 'benefit stacking' and 'strategic satisficing' (Parrish, 2010). The principle of 'benefit stacking' refers to a firm striving to become efficient by 'stacking as many benefits as possible onto each operational activity' (Parrish, 2010, p. 517), such as leatherworking SMEs taking the pollution prevention measures which allow them to become environmentally responsible and conserve resources as well. The principle of 'strategic satisficing' relates to a firm's efforts to 'strategically identify satisfactory outcomes of multiple objectives' (Parrish, 2010, p. 517), such as leatherworking SMEs achieving the economic, social and environmental targets simultaneously.

Respondents from environment support institutes, Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), also confirmed that financial benefits were one of the major attractions for SMEs to improve environmentally. For instance, as the project manager from CPC said:

*'[...] people do not get convinced only with environmental benefits  
[...] the thing that attracts people most is economy, we tell them  
that [...] you would be using lesser chemicals and your product*

*would be processed with lower cost, then even slumbering people become attentive' (Project manager, CPC).*

The above evidence also refers to the fact that intermediary organisations through their motivational and educational initiatives performed a pivotal role in magnifying the economic and competitiveness advantages of environmental improvement to SMEs. Thus, as is also noted earlier (Section 5.3.3), these organisations have been acting as normative institutional forces (DiMaggio and Powell, 1983) advancing the cleaner production agenda across the leather industry through highlighting the economic value of becoming green to the firms.

Respondents from environmentally progressive and moderate SMEs also confirmed that to a larger extent it was through their interaction with meso level actors (intermediary organisations) that they started to realise the economic value of adopting eco-friendly practices. For instance, the respondent from SME 4, one of the environmentally progressive firms, said:

*'When they came, the people from NEC [now CPI], they gradually started to catch many such small things. Basically, we started to monitor what we were doing. From there, the in-house modification started [...] first of all we installed the flow meters in order to measure the volume of water [...]'* (SME 4).

Similar evidence was available from the category of environmentally moderate SMEs, where almost every firm confirmed that through their interventions the environmental support institutes (CPC and CPI) magnified the economic value of adopting cleaner

production practices for them, which drove them to adopt these practices. For instance, as some of the owner-managers from this category of SMEs stated:

*‘When CPC educated us about water and energy saving, and about using measured water, which is a proper system, we felt that there is something good in that’ (SME 6).*

*‘Although our staff was already educated, they [CPC] trained them about using the chemicals in a better way so that minimum chemicals were drained with water’ (SME 7).*

*‘Initially, a lot of water was running in the drum for the washing process. They [CPC] taught us the process of batch washing [...] I mean I have got the awareness’ (SME 10).*

*‘They [CPI] have given enough awareness [...] they used to tell us [...] about using environmentally friendly chemicals, using less float [...] doing the lesser washing, doing closed door washing, things like that’ (SME 20).*

By and large, findings about the economy-led environmental behaviour of SMEs in the Pakistan leather industry are not surprisingly new and lend support to the arguments made elsewhere in the literature that the attraction of economic gains can serve as a leading driver of environmental improvement in some SMEs (Section 2.3.2). Findings also confirm the prevalence of competitiveness logic (Bansal and Roth, 2000) as a driver of environmental improvement in leatherworking SMEs in that they strive to save resources and achieve eco-efficiency while also protecting the wider natural environment. However, given the contextual settings of the leather industry, this study contributes to literature by

highlighting the interaction of meso level institutional forces (intermediary organisations - Cleaner Production Centre and Cleaner Production Institute) with the SMEs at a micro level through their awareness raising and capacity building interventions magnifying the financial and competitiveness benefits of becoming green to them, while also offering the normative pressure (Section 5.3.3) for them to adopt environmental practices. Findings of this subsection thus suggest that the attraction of economic benefits does not operate as piecemeal factor of environmental improvement for leatherworking SMEs (Hamann et al., 2015; Muñoz and Dimov, 2015; Sarkis et al., 2011), but rather it becomes a more effective environmental driver through its interaction with other environmental drivers, such as the intermediary organisations.

#### **5.3.6 Desire for image building**

Another micro level factor that led environmental responsibility in environmentally progressive and moderate SMEs was the desire for building a better image to be known as an eco-friendly business. This could help them attract more customers. It is however noteworthy that not every firm in these two categories explicitly mentioned about this environmental driver. Amongst environmentally progressive firms, it was only the owner-manager of SME 13 who regarded the desire for image building a factor driving environmental responsibility for them. Within the category of environmentally moderate firms, these were only SME 5 and SME 12 which explicitly perceived the image building desire a driver of environmental improvement. Nevertheless, there was sufficient implicit evidence of reputation-led environmental engagement amongst almost all export-oriented, environmentally progressive and moderate SMEs in that, as discussed earlier (Section 5.3.1), these firms were taking environmental measures to meet their

international customers' environmental requirements and thus to be reputed as environmentally compliant firms.

Developing better reputation equates with building symbolic capital, which is about how one is valued by others, such as the honour and prestige that a person or firm possesses (Stringfellow and Shaw, 2009; Shaw et al., 2008; Fuller and Tian, 2006). Since symbolic capital can be converted into economic capital through entrepreneurial initiatives (Gergs, 2003), more specifically the export-oriented, environmentally progressive and moderate SMEs were seen to have been striving to build their reputation as environmentally responsible businesses through adopting eco-friendly practices which could enable them to attract more customers and therefore augment their sales. By developing symbolic capital (reputation of being an eco-friendly business), they were also trying to satisfy some other stakeholders, such as the (international) regulatory bodies (Section 5.3.1 and Section 5.3.2) and normative institutions like the cleaner production centres and industry associations (Section 5.3.3). This enabled them to seek legitimacy of their environmental behaviour and existence locally and internationally.

The simultaneous pursuance of resource accumulation in the form of symbolic capital and augmenting sales to environmentally sensitive buyers suggest that the reputation-driven leatherworking SMEs follow the 'principle of benefit stacking' in that they strive to become efficient by 'stacking as many benefits as possible onto each operational activity' (Parrish, 2010, p. 517). For instance, as owner-manager of SME 13, an environmentally progressive firm, perceived that being known as an ecologically responsible firm would be helpful for broadening the network of customers.



*'[...] when customers come and during the round of factory they see what we are doing about cleaning, recycling or work processes, they get satisfied [...] and they also tell others that the factory is clean, does good work and setup is organised then things move ahead' (SME 13).*

The above evidence reaffirms the value of social capital for better environmental engagement of SMEs. As noted earlier (Section 2.4.2), the concept of social capital refers to 'the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit' (Nahapiet and Ghoshal, 1998, p. 243). It 'thus comprises of both the network and the assets that may be mobilized through that network' (Nahapiet and Ghoshal, 1998, p. 243), such as better reputation expanding the network of customers for leatherworking SMEs enabling them to augment sales to environmentally sensitive buyers and thus enrich their financial resources.

Image building desire for being known as an environmentally responsible firm was also seen to have been a means for attracting brands from international markets in a couple of environmentally moderate SMEs. For instance, as the owner-manager of SME 12 asserted:

*'[...] our image will also improve. It is very clear that the benefit of adopting these [environmental] practices will be an improvement in image [...] we will establish a better image in international market. It becomes easier to work with brands' (SME 12).*

Prevalence of the desire for image building as a driver of environmental improvement in export-oriented leatherworking SMEs was also confirmed by the programme manager of

CPI, who building on his wide ranging experience of working on sustainability challenges of these firms asserted:

*‘Then there is a third factor [...] progressive firms are also exporting [...] therefore they also want to show all these things to the international clients in order to convince them’ (Programme manager, CPI).*

In fact, intermediary organisations, more specifically the CPC and CPI, had been activating the desire for image building to be known as an eco-friendly business amongst leatherworking SMEs. They motivated them that it could help them attract more eco-conscious customers and boost their economic performance. It implies that the interaction between meso and micro level factors underpinned the effectiveness of image building as a driver of environmental improvement. For example, as the project manager of CPC stated:

*‘We [...] make them understand that if you tell the world that you are environmentally compliant, you can ask for some extra money [...] They could invite customers to visit them and observe their systems’ (Project manager, CPC).*

There was also some evidence of leatherworking SMEs following the ‘principle of worthy contribution’, which refers to a firm’s efforts to ‘structure benefit streams to privilege worthy recipients by providing opportunities for contributing to the enterprise’ (Parrish, 2010, p. 517). Some of the sample firms were driven to positively contribute to national image building by adopting sustainable practices. For instance, as owner-manager of an environmentally moderate firm, SME 5, said:

*'We also want to earn profit. Although companies offer us chemicals at cheaper rates, we do not go for them. We are still using expensive chemicals. We also know that if we use cheaper chemicals that will increase our profits, but sometimes, profit is not everything [...] if anyone who is buying furniture [leather] and it does not clear the tests, at the end we will suffer and bring a bad name to the country also' (SME 5).*

Overall, findings of this section are consistent with some earlier studies which argue that the desire to have better reputation can drive some SMEs to adopt environmental practices (Section 2.3.2). However, some Pakistani SME owner-managers do not only attach importance to their firm's image but are also driven by the ambition to contribute to national reputation. It suggests that they do realise the micro and macro level implications of their firms' environmental engagement. It appears that these are the (international) buyers who push SMEs to think about reputational aspect of environmental improvement. Nevertheless, a clear link between the sustainability values and image building can be traced as well. After all, these are the ecological values of owner-managers that would make them responsible enough to think not only about themselves or profitability of their businesses but to consider the reputation of their country as well.

## **5.4 Chapter summary**

This chapter has examined the multilevel (micro-meso-macro) factors that drive environmental responsibility in environmentally progressive and moderate SMEs in Pakistan's leather industry. Operating at the macro level, environmentally sensitive international customers and strict environmental regulations of export markets act as

coercive institutional forces (DiMaggio and Powell, 1983) pushing the export-oriented environmentally progressive and moderate SMEs to reduce their environmental footprints. However, national level environmental compliance, another macro level driver, is not seen to have been operating as an effective environmental driver for SMEs in both categories. It is mainly because of the 'gaps' in formal institutional mechanisms in the country, due to which the enforcement of regulations remains weaker (Kolk, 2014; Ortolano et al., 2014). However, some of the institutional 'gaps' are addressed by the meso level (informal) compensatory structures (Kolk, 2014) offered by the environmental support institutes like Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI). These institutes are seen to have been offering the normative and mimetic isomorphic pressures (DiMaggio and Powell, 1983) for environmentally progressive and moderate SMEs through their awareness raising and capacity building interventions thus driving these firms to adopt cleaner production practices proactively. From another standpoint, CPC and CPI have also been operating as 'proto-institutions' (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002), which through their collaborations with the international sponsors, industry associations and leatherworking firms strived to institutional cleaner production in the leather industry. This meso-level environmental innovation shows that in countries like Pakistan where institutional 'gaps' prevail due to the less effective formal institutional set ups, proto-institutional sponsors, such as the cleaner production centres, can offer (informal) compensatory institutional structures to fill such 'gaps' in the institutional environment. Finally, micro level environmental drivers include the sustainability-values of owner-managers, attraction of economic gains and desire for establishing reputation to be known as an eco-friendly producer.

It is, however, noteworthy that these multilevel environmental drivers do not operate as piecemeal factors for environmentally progressive and moderate SMEs. They rather interact with each other and collectively drive firms in both categories to display environmentally responsible behaviour. In this regard, the role of intermediary organisations, CPC and CPI, has been seen to be crucial. These meso level actors foster the financial considerations of becoming green amongst environmentally progressive and moderate SMEs. They also highlight the benefits of compliance to these firms, especially for operating internationally. Moreover, they activate the sustainability-values amongst SME owner-managers, while also stimulating the desire to build a reputation to be known as an eco-friendly supplier for attracting more customers. These findings point to the value of social capital and relational approaches (Blundel et al., 2013; Spence et al., 2011; Fuller and Tian, 2006; Nahapiet and Ghoshal, 1998) for advancing environmentally responsible behaviour in SMEs. The study thus suggests that SMEs aspiring for environmental improvement need to advance their networking and alliance formation capabilities for collaborating with other institutional actors in their organisational field seeking to extend them the support needed for effectively responding to the emerging challenges of environmental degradation.

Findings also suggest that operating together, the identified environmental drivers, particularly the macro and meso level factors, make the business environment for environmentally and moderate SMEs moderately dynamic (Eisenhardt and Martin, 2000). It is because they do not drive change in the environmental requirements, standards and practices abruptly but rather gradually. More specifically, the industry practices and processes keep changing with the changes in international markets. As new knowledge about responsible methods of leather processing is created and new parameters of best

practices are set, multilevel environmental drivers offer coercive, normative and mimetic isomorphic pressures (DiMaggio and Powell, 1983) pushing Pakistan's leatherworking SMEs to adopt these practices. Environmentally progressive and moderate SMEs in response to such pressures strive to upgrade their processes to become environmentally responsible enterprises.

While an understanding of environmental drivers is of vital importance, what might enable SMEs to take measures for protecting the wider natural environment is equally crucial. However, the enabling factors of environmental improvement in SMEs have only been researched to a limited extent previously (Section 2.5). The next chapter of this thesis, therefore, contributes to the extant literature on sustainability in SMEs by investigating the dynamic capabilities that have enabled the environmentally progressive and moderate SMEs to reduce their environmental footprints.

## **Chapter 6 Dynamic capabilities for environmental improvement in environmentally progressive and moderate SMEs**

### **6.1 Introduction**

The preceding chapter has examined environmental drivers in environmentally progressive and moderate leatherworking SMEs. This chapter investigates the enabling factors of environmental improvement in these firms. It reports on the sub-samples of these two categories because these are the firms that have developed dynamic capabilities for environmental improvement. Four cases (SME 1, SME 3, SME 21 and SME 22) have been categorised as environmentally distanced SMEs, and the factors contributing to their lack of ability to adopt environmental practices have been examined earlier (Section 4.2.3).

The prior literature does not provide sufficient insights about the resources, capabilities and internal processes enabling SMEs to engage with environmental issues (Section 2.4.2) proactively. This study, therefore, contributes to extant literature by exploring the environmental capabilities and their microfoundations in Pakistan's leatherworking SMEs.

Until late 1980s, SMEs in the Pakistan leather industry were not much aware of the concept of cleaner production, which aims at achieving a different 'organisational mindset to environmental management and resource use, and thereby establish a continuous environmental improvement process, or ensure integration of environmental and resource considerations in already existing continuous improvement processes in the organisation' (van Berkel, 2007, p. 686). They were following the conventional methods of leather processing that were neither environmentally friendly nor resource efficient. With the passage of time as environmental pressures started to mount and environmental

awareness was spread across the leather industry (Sections 1.5 and 5.3), progressive firms, such as the environmentally progressive and moderate SMEs in this study, focused at acquiring the resources and capabilities needed for environmental improvement. These changes came in an incremental manner making the business environment for leatherworking SMEs moderately dynamic. For instance, as a project manager from Cleaner Production Institute (CPI), who had witnessed this transition in the industry, also remarked:

*'We started working with the tannery sector in 1980s. We started our work at a time when tanneries did not know about environment [...] they used to have only one focus i.e. purchase raw material and develop a product [...] we explained them each and everything [about environment] [...] they kept understanding and adopting these things gradually' (Project manager, CPI).*

Three dynamic capabilities enabled the environmentally progressive and moderate SMEs to adopt environmental practices: (a) ecological learning capability, (b) capability for seizing environmental opportunities and (c) enterprise reconfiguration capability. A number of factors served as the 'microfoundations' (Felin et al., 2015; Barney and Felin, 2013; Felin et al., 2012; Teece, 2007) upon which SMEs in the two categories built these environmental capabilities. As a reminder, the phenomenon of researching 'microfoundations' relates to unpacking the 'collective concepts to understand how individual-level factors impact organizations, how the interaction of individuals leads to emergent, collective, and organization-level outcomes and performance, and how relations between macro variables are mediated by micro actions and interactions' (Felin et al., 2015, p. 576). While explicating the microfoundations on which firms can build their dynamic capabilities, Teece (2007, p.



1319) has argued that this phenomenon relate to 'the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines' which 'undergird enterprise-level sensing, seizing, and reconfiguring capacities'.

While there were similarities in the microfoundations of environmental capabilities in environmentally progressive and moderate SMEs, some differences also prevailed. For example, drawing on their inter-organisational relationships, SMEs in both these categories had formed the sustainability-oriented alliances for their environmental capacity building. The institutional actors with whom these SMEs entered into environmental collaborations showed some similarities but also some differences across the firms and categories. For instance, while almost every firm in both categories advanced its environmental knowledge resources with the support from intermediary organisations and input suppliers, some but not all of these firms also acquired these resources with the help of product testing labs and educational institutions. At the same time, the resource rich firms, more specifically the ones in the category of environmentally progressive SMEs, acquired environmental knowledge through in-house R&D, which their relatively less resource rich counterparts, environmentally moderate firms, struggled to undertake independently. Moreover, resource rich, environmentally progressive SMEs exploited environmental opportunities by buying expensive cleaner technologies, such as colour coating machines and solar heating system, whereas environmentally moderate firms, because of not having sufficient economic resources, focused on building collaborative technological assets, like combined effluent treatment plant at the cluster level, by pooling their limited resources and/or buying less expensive cleaner technologies, such as dust collectors and steamers for water heating.

Proactive environmental behaviour of owner-managers also made a considerable contribution to the environmental capacity building of environmentally progressive and moderate SMEs (Hamann et al., 2015; Williams and Schaefer, 2013; Hammann et al., 2009). Yet, the microfoundations that underpin the environmentally responsible behaviour of SME owner-managers vary across firms and categories. For example, some owner-managers developed this behaviour by receiving training informally from the environmental support institutes, and in others, it happened while attaining a degree in leather technology from a formal educational institute.

The 'proto-institutional' role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) that intermediary organisations, more specifically the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), performed by supporting and enabling environmentally progressive and moderate SMEs to acquire and diffuse the environmental knowledge and cleaner technologies, was of vital importance. These organisations acted as (informal) compensatory institutional structures (Kolk, 2014), offering the much needed support to leatherworking SMEs for their environmental capacity building in the absence of such support from the formal institutional mechanisms in the country.

The remainder of this chapter is structured in four sections. The next three sections report on findings about the dynamic capabilities for environmental improvement as identified, and in the process also uncover the microfoundations that underpin these capabilities. Findings about ecological learning capability are reported in Section 6.2. Section 6.3 presents findings on dynamic capability for seizing environmental opportunities. Section

6.4 is about enterprise reconfiguration capability. The chapter concludes with a summary in Section 6.5.

## **6.2 Ecological learning capability**

The dynamic capability for ecological learning was identified as one of the keystones that enabled the environmentally progressive and moderate leatherworking SMEs to proactively adopt environmental practices. Drawing on this capability, these firms were seen to have purposefully created, extended and modified their environmental knowledge resources (Helfat et al., 2007). These resources advanced the 'sensing' capability (Teece, 2007, p. 1322) in these firms, which enabled them to identify environmental opportunities by understanding the environmental demands of different stakeholders (for example, the international customers and regulatory authorities), structural evolution of their industry and markets, and likely responses of suppliers and competitors.

The microfoundations that underpinned this environmental capability comprised the processes of knowledge exploitation and exploration. While the knowledge exploitation processes relate to the acquisition and diffusion of existing knowledge resources, knowledge exploration processes comprise the initiatives of searching or creating new knowledge resources, for example by undertaking R&D (Eriksson, 2014; Dixon et al., 2013; Lewin et al., 2011; March, 1991). It is however noteworthy that while knowledge exploitation processes were in practice in every firm in both categories, knowledge exploration processes remained a hallmark of resource rich environmentally progressive SMEs and few of the environmentally moderate firms that managed to collaborate with other institutional actors, such as the cleaner production centres and product testing labs, for using their research facilities to explore environmental knowledge. Thus, those firms

that built their ecological knowledge resources through both exploitation and exploration processes to effectively meet the emerging environmental challenges displayed to have the feature of 'organisational ambidexterity' (O'Reilly and Tushman, 2008; Tushman and O'Reilly, 1996). Ambidexterity is a capability of a firm to acquire the existing resources and create the new ones simultaneously to survive in the face of change (O'Reilly and Tushman, 2008; Tushman and O'Reilly, 1996). The pursuance of ecological learning processes of environmentally progressive and moderate SMEs also refer to the presence of absorptive capacity in these firms. This capability relates to a firm's ability to recognise the value of new, externally situated knowledge, assimilate that, and apply that to commercial ends (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990).

The next two subsections, 6.2.1 and 6.2.2, report on findings about the processes of environmental knowledge exploitation and exploration in environmentally progressive and moderate SMEs that underpin the dynamic capability of ecological learning.

### **6.2.1 Developing ecological learning through knowledge exploitation**

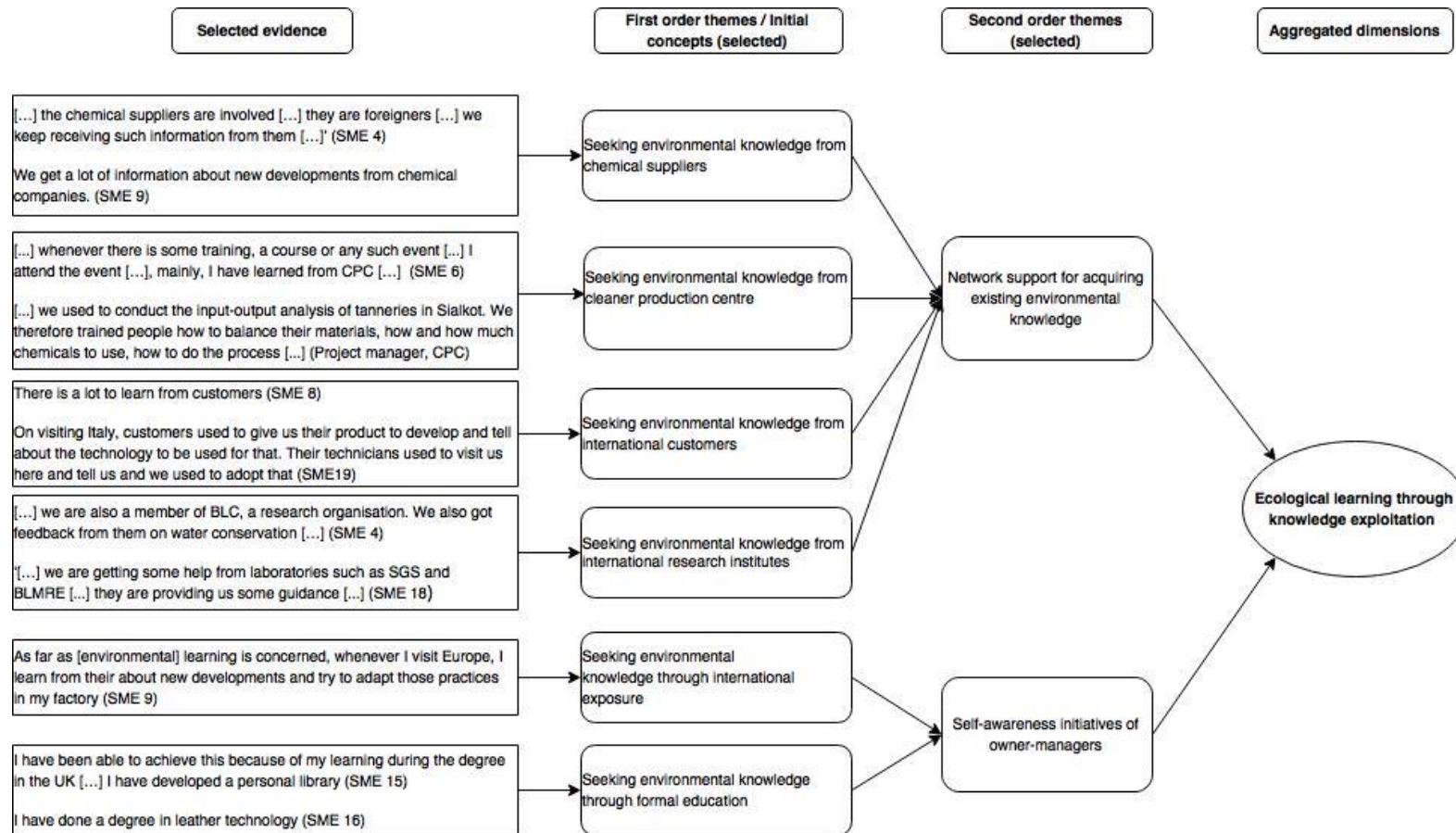
Knowledge exploitation processes relate to the acquisition and use of existing sources of knowledge (Eriksson, 2014; Dixon et al., 2013; Lewin et al., 2011; March, 1991). These processes are often induced by the external institutional and technological pressures (Kjærgaard and Kautz, 2008). Driven by different isomorphic pressures (Section 5.3), environmentally progressive and moderate SMEs were seen to have been acquiring the existing ecological knowledge from multiple sources.

Figure 6.1 displays 'data structure' for the theme ecological learning through knowledge exploitation processes (Gioia et al., 2013). It demonstrates that multilevel (micro-meso-macro) factors underpin the learning processes in environmentally progressive and moderate SMEs. Key factors relate to the network support and self-awareness initiatives of SME owner-managers (Figure 6.1).

For instance, these firms were learning from the Cleaner Production Centre (CPC), Cleaner Production Institute (CPI) and input suppliers. Such learning relationships of SMEs demonstrate their ability to advance environmental knowledge resources by effectively deploying social capital. According to Nahapiet and Ghoshal (1998, p. 243), for example, social capital is 'the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. [It] thus comprises both the network and the assets that may be mobilized through that network'. By developing networks and participating in environmental capacity building activities of cleaner production centres, input suppliers and research and educational institutes, environmentally progressive and moderate SMEs minimised the transaction costs of accessing externally existent environmental knowledge (Woo et al., 2014; Bos-Brouwers, 2010). Consistent with some earlier studies (Klewitz and Hansen, 2014; Wassmer et al., 2014; Hofmann et al., 2012; Gold et al., 2010; Daddi et al., 2010), the value of environmental collaborations for SMEs to advance their ecological learning came up strongly in the context of Pakistan's leather industry.

The next four subsections present findings about these key factors that underpin ecological knowledge exploitation processes in environmentally progressive and moderate SMEs.

**Figure 6.1: Data structure for ecological learning through knowledge exploitation**



Source: Developed by the researcher.

**(a) Intermediary organisations – the environment support institutes**

Every environmentally progressive and moderate firm advanced its environmental knowledge resources through collaborations with intermediary organisations. Key intermediaries operating in the leather industry were the Cleaner Production Centre (CPC), Cleaner Production Institute (CPI), Pakistan Tanners Association (PTA), Pakistan Gloves Manufacturers Exporters Association (PGMEA) and management of combined effluent treatment plants in Kasur and Karachi clusters (Section 1.5). For example, owner-manager of one of the environmentally progressive firms, SME 13, asserted that they acquired a lot of environmental knowledge through their interaction with the Kasur Tannery Waste Management Authority [KTWMA] and Pakistan Tanners Association (PTA):

*‘[...] [environmental] awareness came to us through that project [KTWMA] [...] PTA is our representative industrial association. When attending its meetings, we get [environmental] information through mutual discussions’ (SME 13).*

Similarly, the owner-manager of SME 19, another firm from the same category of SMEs, stated that it was through their collaborations with Cleaner Production Institute (CPI), previously known as NEC, that they were able to access the latest information on cleaner production processes.

*‘There have been different campaigns. For example, the Netherlands [...] gave some funding and NEC was made. Their unit was established in Lahore with the aim of educating the industry [...] They properly do the audit and tell us about what and how different*

*things need to be done [...] you need to know at least something from somewhere. Due to some hurdles, we have to learn things from other sources' (SME 19).*

Not only environmentally progressive SMEs drew on their relationships with intermediary organisations for ecological learning, environmentally moderate SMEs also advanced their environmental knowledge resources through such collaborations. For example, two of the owner-managers of environmentally moderate firms, SME 6 and SME 10, appreciated the role of Cleaner Production Centre (CPC) in raising their environmental awareness.

*'Within Sialkot, CPC is a very good institute regarding leather and they tell everything about environment [...]' (SME 6).*

*'A course was also arranged by the CPC for this [...] Initially, a lot of water was running in the drum for the washing process. They taught us the process of batch washing [...] the batch washing process helped us to minimise the use of water' (SME 10).*

The knowledge that environmentally progressive and moderate SMEs extracted from different intermediary organisations enabled them to explore new environmental opportunities, for example in the form of conserving resources. Partly, these findings are consistent with the previous literature (e.g. Ortolano et al., 2014; Blackman and Kildegaard, 2010; Simpson et al., 2004; Rothenberg and Becker, 2004), which argues that intermediary organisations can raise the level of 'eco-literacy' (Tilley, 2000) amongst smaller businesses which can enable them to move up the environmental learning curve.



The events through which intermediary organisations disseminated environmental knowledge amongst the leatherworking SMEs included the lectures (SME 13), seminars (SME 15), workshops (SME 8) and trainings (SME 7), in addition to the peer group based learning activities (SME 6). For example, as one of the respondents from environmentally progressive firms, SME 13, said:

*'[...] lectures about in-house improvements were arranged. They [management of combined effluent treatment plant] informed about desalting [...] We learned about the proper RMP, temperature maintenance and the PH level required for better chrome penetration. All such awareness came to us through that project' (SME 13).*

Similarly, one of the owner-managers of environmentally moderate firms, SME 11, for instance, stated that:

*'[...] whenever a seminar was arranged by CPC or in the Chamber, we attended that. They have provided much guidance to people about this' (SME 11).*

Peer informed learning was a considerable initiative of the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI). They had formed different working groups, and each group was assigned a task, for example, how to conserve water and energy: *'They had formed groups and my group worked on energy conservation' (SME 14)*. After successfully adopting the informed cleaner processes, entrepreneurs were asked to share the acquired knowledge and skills and the outcomes achieved with their peers. The purpose was to spread eco-friendly practices across the leather industry. This also helped intermediary

organisations in winning the trust of SME owner-managers who were initially reluctant to work with them and/or had concerns about adopting cleaner production practices. By engaging different international consultants, CPC and CPI also made the internationally available latest environmental knowledge accessible to environmentally under-informed SMEs:

*'The foreigners used to come here for training us [...] whatever new [environmental] information we get that comes from them [CPC]. Otherwise, it is hard to go outside for information seeking [...]' (SME 14).*

These tripartite arrangements between the intermediary organisations, international experts and leatherworking SMEs were another means of developing social capital in these firms, which enabled them to extract environmental knowledge from such valuable sources that they would have struggled to access otherwise because of being resource deficient.

Intermediary organisations, more specifically the CPC and CPI, in fact, performed a 'proto-institutional' role in Pakistan's leather industry (Lawrence et al., 2002; Zietsma and McKnight, 2009; Gómez and Atun, 2013). While working in collaboration with many leatherworking firms, national and international environment experts and other partners such as the British Leather Confederation (BLC), Textile Testing International laboratories (Tti), Basic Laboratory Methods in a Regulated Environment (BLMRE), Société Générale de Surveillance (SGS) and Institute for Creative Leather Technologies (ICLT)<sup>17</sup> University of Northampton UK, these organisations introduced the leather manufacturers to those

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<sup>17</sup>Previously also known as the Nene College of Higher Education, Northampton, UK.

cleaner production processes and cleaner technologies that were not known to them previously. All these efforts were steered towards institutionalising cleaner production in the leather industry. CPC and CPI also offered an (informal) compensatory institutional structure (Kolk, 2014) in Pakistan, which compensated for the lacked support for environmental capacity building of leatherworking SMEs from the formal institutions, like the Ministry of Environment. Thus, these organisations partly helped addressing some of the institutional ‘gaps’ (Kolk, 2014) in the country. For instance, as a programme manager from Cleaner Production Institute (CPI) reflected on their experience of advancing ecological learning amongst SMEs, he said:

*‘[...] knowledge dissemination was one of the most important component of our activities [...] we have worked with 200 to 250 tanneries. We have conducted trainings in almost all these tanneries [...] our projects are designed in such a way that not only on the job training are delivered but also many seminars and workshops are arranged [...] We also prepare a number of materials for dissemination and communication. We develop brochures and leaflets. We also develop posters. Using these, we convey many things to the industry.’ (Programme manager, CPI).*

Similarly, the project manager from Cleaner Production Centre (CPC) narrated:

*‘[...] we used to conduct the input-output analysis of tanneries in Sialkot. We therefore trained people how to balance their materials [...]. Here about 85 percent chemicals were wasted and those became a part of pollution [...] we studied their whole processes to*

*prepare guidance reports [...] we provided about 180 reports to all the tanneries. These were one-page reports in the local language, 'Urdu'. We not only provided the reports but, for two to three years, also hired the professionals, leather technologists to keep a follow up to observe where the tanneries were facing problem in the implementation of new processes. If they faced any problem, we helped them to solve that' (Project manager, CPC).*

In summary, the interlocks between environment support institutes and environmentally progressive and moderate firms led to the emergence of learning networks<sup>18</sup> - the environmental knowledge sharing mechanisms (Klewitz and Zeyen, 2010; Battaglia et al., 2010). These networks enabled leatherworking SMEs in both categories to acquire existing environmental knowledge from external sources. Newly acquired environmental knowledge resources underpinned the advancement of dynamic capability for ecological learning in these firms, enabling them to better understand the environmental concerns of their stakeholders and the best cleaner production practices. Findings also suggest that intermediary organisations, CPC and CPI, have performed a 'proto-institutional' role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) by introducing those environmental practices to leatherworking SMEs that were not known to them previously. By offering the (informal) compensatory institutional structure (Kolk, 2014),

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<sup>18</sup> A network is a set of autonomous organizations that join together to achieve goals that none of them can fulfill on their own and where the total contributions from different actors exceed the sum of the contributions from individual actors (Chisholm, 1998). Thus ecological learning networks relate to the interconnections between firms and other institutional actors of their organisations field which can lead to the establishment of environmental knowledge sharing mechanisms to raise environmental knowledge resources needed to address environmental issues at a larger scale (Klewitz and Zeyen, 2010; Battaglia et al., 2010).

environment support institutes strived to institutionalise cleaner production in Pakistan's leather industry.

**(b) *Input suppliers***

Environmental collaborations with supply chain partners (Hofmann et al., 2012; Gold et al., 2010), such as the chemical sellers and cleaner technology consultants, also underpinned the knowledge exploitation processes and therefore the ecological learning capability in environmentally progressive and moderate SMEs. Through their collaborations with input suppliers, SMEs in both categories developed their pollution prevention and product stewardship capabilities. Pollution prevention capability enables firms to prevent the waste and reduce emissions from the production processes (Hart, 1995). Product stewardship capability refers to the ability of firms to integrate external (stakeholders) perspectives into the product design and development processes, enabling the firms to address environmental concerns spanning along their entire value chain or life cycle of their production systems (Hart, 1995). Both these capabilities served as precursors to the presence of ecological learning capability in leatherworking firms.

Export-oriented SMEs in both categories had developed links with the agents and technicians of different international chemical companies to acquire knowledge about using environmentally less harmful chemicals for preventing pollution. Such learning relationships were helpful for these firms to remain vigilant about the emerging international best practices of leather production. For instance, as respondents from two of the environmentally progressive firms, SME 4 and SME 15, respectively said:

*'[...] the chemical suppliers are involved [...] they are foreigners [international companies], some are Germans and some are Italians [...] we keep receiving such information from them [...]' (SME 4).*

*'[...] I also visit the chemical companies in foreign countries [...] I gained a lot of experience from these visits. I clarified a number of confusions [about using environmentally less harmful chemicals] while visiting these companies' (SME 15).*

Similarly, evidence from two of the environmentally moderate firms, SME 9 and SME 20, for instance, confirmed that one of the key sources of acquiring environmental knowledge for firms in this category was the chemical suppliers.

*'We get a lot of information about the new developments from the chemical companies. Their employees get training and then transfer that knowledge to us' (SME 9).*

*'Almost all of them [foreign chemical suppliers] have their agents here. We directly remain in contact with their technicians and if any new research is introduced they tell us about that' (SME 20).*

Respondents from both categories revealed that better quality chemicals, which were often imported (SME 4), due to their improved composition (SME 16), when used were useful for conserving water (SME 5), reducing water pollution (SME 13) and addressing concerns of end users of leather products, for example, about skin diseases (SME 14). As noted earlier (Section 5.3.1), across the leather industry such chemicals were known as

REACH compliant inputs the use of which was considered a basic requirement for exporting leather products.

Some of the firms in both categories were also seeking support from the industry experts, mainly private consultants, to enhance their environmental knowledge resources. Such consultants were appreciated for providing useful information about cleaner technologies. Depending on the nature of technology and their financial capacity, SMEs could approach the technical experts either from within the domestic market or from foreign countries. For instance, SME 4, an environmentally progressive firm, was using much advanced technologies which were often purchased from foreign countries. Its manager asserted that they were seeking knowledge about such cleaner technologies from international technology consultants.

*'[...] there is an Italian company, Ital Porte, they are specialist in treatment plants [...] we also get some guideline from them' (SME 4).*

On the other hand, owner-managers of environmentally moderate SMEs which were relatively less resource rich and could not afford to buy much expensive cleaner technologies were seen to have been seeking information about such technologies from local private consultants. Often such consultants provided these SMEs with information about modifying their existing technological assets by making reasonable investments. For instance, as the owner-managers of SME 7 and SME 12 said, respectively:

*'I was visiting Faisalabad [a city in Pakistan] to see a guy for getting a better boiler; he told me that he was doing this in the textile sector*

*[...] He showed me the snaps and explained me the process. I asked him to modify one [machine]' (SME 7).*

*'Actually, there are people in the [domestic] market who keep working on such things. It is our job to ask them questions about better solutions for improving the systems [...] someone from the market provides some solutions for the issues [...]' (SME 12).*

### **(c) Customers**

Customers also supported the ecological knowledge exploitation processes in environmentally progressive and moderate SMEs, but mainly in export-oriented firms. Respondents revealed that there *'[...] is a lot to learn from customers'* (SME 8) who not only *'[...] generate the demand for adopting a [cleaner] process [...]'* (SME 15) but also *'[...] provide environmental information'* (SME 7) about how to adopt such processes.

For example, as the owner-manager of SME 19, one of the environmentally progressive firms, asserted that they learned from their international buyers about adopting cleaner technologies which enabled them to control pollution and meet the environmental requirements of their buyers as well:

*'On visiting Italy, customers used to give us their product to develop and tell about the technology to be used for that. Their technicians used to visit us here and tell us and we used to adopt that' (SME 19).*



Similarly, owner-manager of one of the export-oriented environmentally moderate firms, SME 14 for instance, narrated that international customers were a source of ecological learning for them:

*'[...] we mostly get [environmental] information from external sources. Almost after every two or three years, they [international buyers] introduce a new development and send us the instructions that when a product is produced the following elements should be removed from it [...] what has happened to us is that about 3 to 5 years ago, there was lack of [environmental] awareness. When the world started to impose restrictions, we started to get information and increased our awareness about using appropriate chemicals' (SME 14).*

The above representative evidence implies that environmentally progressive and moderate SMEs were operating in a moderately dynamic market environment (Eisenhardt and Martin, 2000) in that the environmental requirements of customers and emerging best practices of producing leather in an eco-friendly way came to these firms incrementally rather than abruptly. The findings also suggest that the interactions between export-oriented leatherworking SMEs and their buyers serve as means of advancing 'sensing' capability (Teece, 2007, p. 1322) in these firms, which enables them to understand the environmental demands of their environmentally sensitive customers. At the same time, such interactions serve as channels for advancing 'eco-literacy' skills (Tilley, 2000) amongst human resources in leatherworking SMEs. These skills refine the ability of individuals, such as the owners, managers and labour force, to understand and implement/follow the

principles of environmental protection. Overall, findings are consistent with some earlier studies, which suggest that customers can support ecological learning processes in environmentally proactive SMEs (e.g. Roy and Thérin, 2008).

It is, however, noteworthy that in the Pakistani context these were not the domestic customers who had the potential to support ecological learning mechanisms in leatherworking SMEs, but rather they were the international buyers. A possible explanation for this can be that generally, people in Pakistan are not as sensitive towards environment as others are in some developed countries such as the Europeans. At the same time, the majority of local communities does not have enough buying power to purchase expensive leather products. As a result, their concerns about hazards attached with the use of leather products seem to remain limited. Thus, export-oriented firms when dealing with international customers often come across such product requirements which push them to become environmentally responsible suppliers (Section 5.3.1). These findings highlight the positive influence of embeddedness in international green supply chains (Gombault and Begeer, 2013; Gold et al., 2010) on ecological learning capability of SMEs. In fact, export-oriented leatherworking SMEs sit between the much larger international customers, at the one end of supply chain, and large size input (chemical) suppliers, at the other end. This placement offers these firms an opportunity to acquire environmental knowledge from external sources and therefore advances their dynamic capability for ecological learning.

***(d) Research, educational and leather technology institutes***

Though not every but some of the environmentally progressive and moderate SMEs had also been able to enrich their environmental knowledge portfolios through their associations with the industry related research and educational institutes, and product

testing laboratories. Some of the sample firms were members of British Leather Confederation (BLC) (an organisation which provides the testing, training, audit and technical support services to leather manufacturers internationally) and were benefiting from the knowledge repositories of this organisation. For example, SME 4, one of the environmentally progressive firms, had attained the membership of BLC to benefit from their research:

*'[...] we are also a member of BLC, a research organisation. We also got feedback from them on water conservation [...] BLC has a big name in leather. All the issues concerning restricted chemicals are discussed with them' (SME 4).*

Just like their environmentally progressive counterparts, some of the environmentally moderate firms had also entered into collaborations with the national and international laboratories, like as Société Générale de Surveillance (SGS), Textile Testing International (Tti), and Basic Laboratory Methods in a Regulated Environment (BLMRE), in order to advance their ecological learning capability. For instance, while highlighting the importance of networks for exploiting environmental knowledge, respondent from SME 18, an environmentally moderate firm, said:

*'[...] we are getting some help from laboratories such as SGS and BLMRE, you know BLMRE in England, they are providing us some guidance and we are also using internet [...] so we are actively using our networks' (SME 18).*

At the same time, few owner-managers from both categories of SMEs had also attained the industry related education from well reputed leather technology institutes, such as the

Institute for Creative Leather Technologies (ICLT), University of Northampton UK. And this was seen as one of the effective means for their firms to advance ecological learning capability. In fact, having realised the intensity of emerging environmental challenges, the first generation owner-managers of some of the environmentally progressive and moderate SMEs, which had sufficient economic resources, had taken the strategic decision to send their kids to foreign countries, mainly the UK, for having industry-specific qualifications and trainings. Their purpose was to equip the next generation of entrepreneurs with the latest knowledge of leather processing so that they could comprehend and address the environmental challenges efficiently. It implies that, to some extent, ownership structure of the firm can also influence ecological learning capability of SMEs. For example, a second generation owner-manager of an environmentally progressive firm, SME 15, who had attained a degree in leather technology from the Institute for Creative Leather Technologies (ICLT), University of Northampton UK, said:

*'It is my family business and the main reason of studying abroad was that our business was dependent upon technicians. My elder brother was not a leather man, I mean he was not technical [...] he always used to say that someone amongst us should study. Right from our third brother, the target was to send someone abroad for studies [...] So, I went to Northampton and completed my graduation from there in leather technology [...]' (SME 15).*

Similarly, the owner-manager of an environmentally moderate firm, SME 16, who had also attained a degree in leather technology from the same institute with the purpose of

becoming able to effectively address the emerging environmental challenges of leather production asserted:

*'We are preparing ourselves for the future. That is why I have done a degree in leather technology [from the University of Northampton, UK] so that if some challenges emerge in the future and environmental concerns become too significant and wet-blue stage faces more problems, then there should be a proper person to handle those challenges' (SME 16).*

The key role of an entrepreneur in dynamic capabilities framework is to sense opportunities and lead the organisation forward to seize them (Augier and Teece, 2009, p. 418). Findings of this study clearly show that owner-managers of environmentally progressive and moderate SMEs performed this role effectively as they identified environmental opportunities, such as serving environmentally sensitive buyers and becoming eco-efficient, through the advancement and deployment of ecological learning capability. Generally, SMEs that proactively got engaged with research and educational institutes were owned and managed by better educated entrepreneurs. They also had considerable major export concerns, which were pushing them to remain environmentally better informed about the latest developments in the international markets. Moreover, such firms were relatively older, better established and of medium-size (Table 3.4). Building on their experience, owners and managers of these firms, could, therefore, better appreciate the value of knowledge resources for remaining environmentally competitive.

The next sub-section reports on findings about ecological knowledge exploration processes in environmentally progressive and moderate SMEs, which is another key mechanism that underpins ecological learning capability.

### **6.2.2 Developing ecological learning through knowledge exploration**

Knowledge exploration processes can comprise of activities such as the ‘search, variation, risk taking, experimentation, play, flexibility, discovery, [and] innovation’ (March, 1991, p. 71). Through R&D and experimentation firms can acquire new knowledge that can enable them to build their ‘sensing’ capability drawing on which they can better understand the changes taking place in the business environment such as the emerging customers’ demands, structural evolution of industries and markets, and likely responses of suppliers and competitors (Teece, 2007, p. 1322).

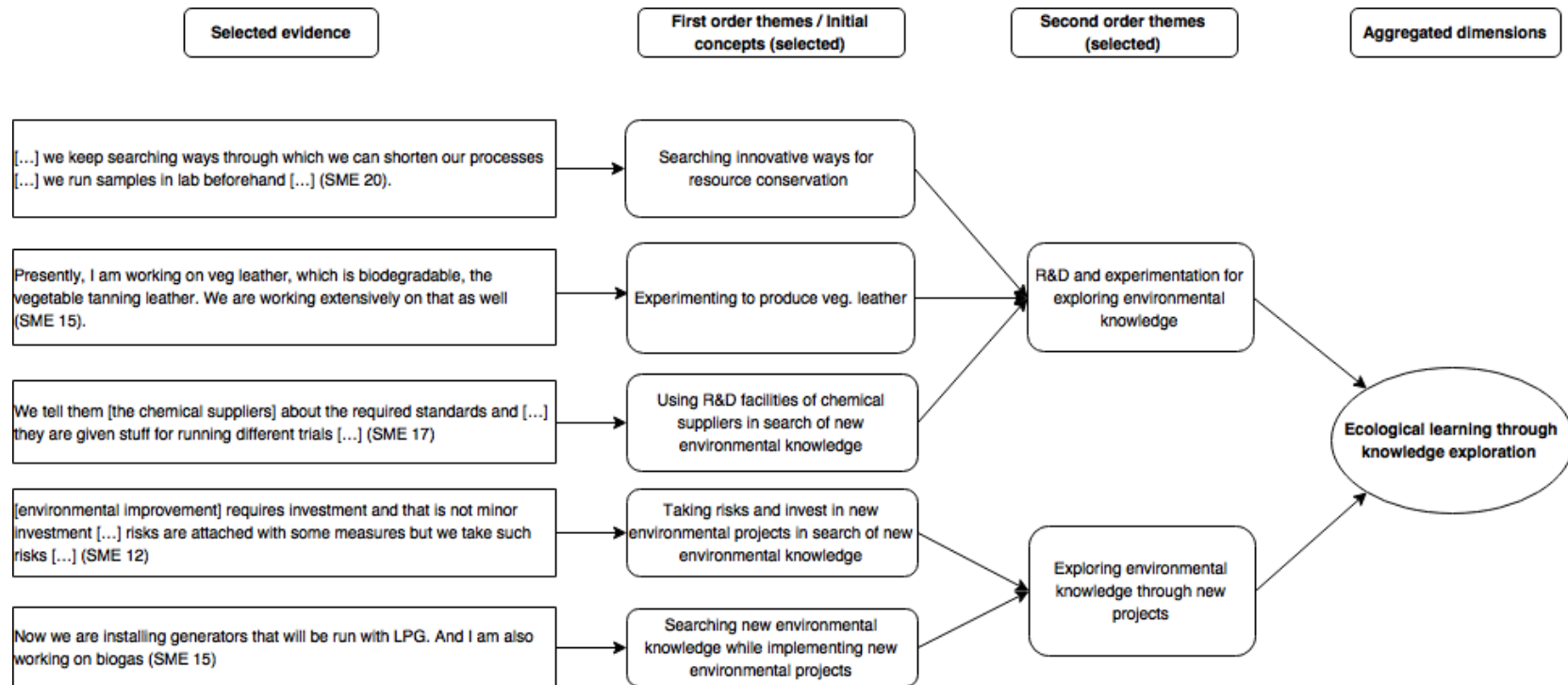
Every environmentally progressive firm had adopted the knowledge exploration processes in order to effectively coevolve (Lewin et al., 1999; McKelvey, 1997) with the moderately dynamic market environment which was shaped by the emerging environmental demands of different stakeholders, such as the international customers and regulatory bodies. These firms were actively undertaking R&D and investing in new environmental projects, which were seen to have advanced their path creation competency and innovation potential (Klewitz and Hansen, 2014; Dixon et al., 2013). Path creation competency relates to a firm’s ability to generate new directions for growth and development which are unique to the organization and may help it to become competitive and sustain that competitiveness (Dixon et al., 2013). Initiatives like new project selection, funding and implementation can underpin this capability. And innovation potential of a firm reflects its ability to implement new ideas for achieving better performance. Innovative measures, such as reconfiguration

of resources, can also help advance new routines and capabilities in firms (e.g. Dixon et al., 2013).

In contrast to the category of environmentally progressive SMEs, not every environmentally moderate firm had the ability to adopt ecological knowledge exploration processes. More specifically the smaller and less established medium firms, like SME 10 and SME 14 (Table 3.4), were seen not to have got involved in such form of ecological learning. Possibly, because they were less resource rich and could not afford to have in-house R&D facilities. Nevertheless, some of the firms in this category that were predominantly export-oriented units and whose owner-managers had a high level of environmental stewardship had taken some measures for exploring ecological knowledge by entering into collaborations with other institutional actors such as the research labs and input suppliers.

Figure 6.2 illustrates 'data structure' capturing the identification process of the theme ecological learning through knowledge exploration (Gioia et al., 2013). The Figure uncovers that the microfoundations of knowledge exploration processes relate to undertaking R&D and investing in new environmental projects, about which findings are presented below.

Figure 6.2: Data structure for ecological learning through knowledge exploration



Source: Developed by the researcher.



**(a) R&D and experimentation for exploring ecological knowledge**

Every environmentally progressive firm had the ability to explore environmental knowledge through undertaking in-house R&D - a key microfoundation of the dynamic capability for ecological learning. The evidence presented earlier (Section 4.2.1) offer support this point. For instance, the owner-manager of SME 15 who had been proactively undertaking R&D for searching new knowledge for adopting better eco-friendly production processes, said:

*'I have personally designed a conditioning machine. I mean no such machine exists. I felt that such a machine should be there [...] I did research [...] with the conditioning machine, I have controlled the dust to a greater extent' (SME 15).*

On the same topic, owner-manager of SME 13, another environmentally progressive firm, asserted that it was through their ability to undertake R&D that they were able to learn how to achieve better penetration of chemicals into leather and reduce pollution load:

*'Initially, we set up a chrome recovery system but then after doing some research we learned how to achieve maximum penetration of chrome in the drum during a process' (SME 13).*

Respondents from environmentally progressive firms also appreciated the importance of the ability to undertake R&D for acquiring new environmental knowledge in order to meet the environmental needs of their businesses efficiently. For instance, as the manager of SME 4 asserted:

*'[...] the R&D department is there. It has significant role [...] For everything we used to run a trial at a pilot scale and if we found that feasible we used to go ahead with that' (SME 4).*

Compared to the category of environmentally progressive SMEs, not every environmentally moderate firm had the ability to undertake in-house R&D for exploring ecological knowledge. Amongst those who had this ability, though, at a limited scale, they had substantial export concerns, except two firms, SME 6 and SME 7, which were operating in domestic market only. This shows that environmental sensitivity of international customers was driving these firms to undertake R&D. These findings thus suggest that to an extent the nature of market SMEs operate in can influence their ecological learning considerations. For instance, as the owner-manager of SME 16 said:

*'[...] because we are in exports, [...] if we do not keep ourselves updated, I think, we can operate only for one year at the maximum' (SME 16).*

Compared to the smaller firms, R&D initiatives were more common in medium sized environmentally moderate leatherworking units. Though some smaller firms had developed the set up to undertake in-house R&D, their level of experimentation varied much from their medium sized counterparts, mainly because of the differences in resource and capability endowment. For instance, as the following two interview extracts indicate that resource rich firms, such as SME 20, had established proper labs for exploring innovative eco-friendly processes of leather production. In contrast, resource deficient smaller units, for instance, SME 6, had made less formal arrangements for the same purpose.

*'[...] we keep searching ways through which we can shorten our processes. For this, we keep running trials that how to achieve that [...] That is the reason why we run samples in the lab beforehand [...]'* (SME 20).

*'That [small drum] is used for experiments [...] that is a routine matter'. (SME 6).*

All medium sized firms in environmentally moderate category did not have homogenous resources. Their arrangements for R&D and experimentation therefore also varied. Those who could not afford having in-house R&D set ups, they formed alliances to search for new environmental knowledge. Examples included the environmental collaborations with different supply chain partners, such as the chemical companies and research labs, to benefit from their research facilities to explore eco-friendly production processes for meeting the environmental demands of customers. For instance, as the owner-manager of SME 17, a medium sized tannery, narrated:

*'We tell them [the chemical suppliers] about the required standards and [...] they are given stuff for running different trials. They run the trials for us and fulfil our requirements. Accordingly, we remanufacture gloves [...]'* (SME 17).

These findings are consistent with Halme and Korpela (2014) who have also identified that some Nordic SMEs, instead of adopting firm level R&D, rely on their networks for acquiring industry related knowledge for responsible innovations. The above findings also suggest that through R&D collaborations leatherworking SMEs develop their product stewardship capability (Hart, 1995), which relates to a firm's ability to integrate external (stakeholders)

perspectives into its product design and development processes that enable it to address environmental concerns spanning along its entire value chain or life cycle of its production systems.

Variance in the ability of leatherworking SMEs to explore new environmental knowledge through R&D was also linked with the environmental competencies of owner-managers. Compared to less educated entrepreneurs, better qualified entrepreneurs could proactively explore ecological knowledge. An example was SME 15, an environmentally progressive firm, whose owner-manager had gained formal education in leather technology (from the Institute for Creative Leather Technologies (ICLT)<sup>19</sup>, University of Northampton UK) and having developed interest in starting the production of vegetable tanned leather, which could be less harmful to the environment, was actively doing research on developing this product:

*‘Presently, I am working on veg leather, which is biodegradable [...]*

*We are working extensively on that as well’ (SME 15).*

It appears that the heterogeneity in resource and capability endowment of SMEs, in addition to the nature of market in which these firms operate, determine their R&D and experimentation engagements influencing their environmental knowledge resources. On analysing in conjunction with findings from Chapter 5, these findings also suggest that SMEs serving only domestic customers develop their R&D capability due to the sustainability-oriented values of their owner-managers and/or normative pressure from intermediary organisations. In contrast, SMEs that are embedded in international supply chains they are

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<sup>19</sup> Previously also known as Institute for Nene College of Higher Education, Northampton, UK.

pushed for undertaking R&D by the environmental requirements of international customers, in addition to the sustainability values of their owner-managers and pressure from intermediary organisations.

In summary, by searching new environmental knowledge through R&D and experimentation every environmentally progressive firm and some of the environmentally moderate SMEs strive to adapt their processes and products in order to coevolve with industry dynamics (Lewin et al., 1999; McKelvey, 1997). R&D also enables these firms to develop pollution prevention and product stewardship capabilities for reducing their environmental footprints (Hart, 1995). These capabilities serve as precursors to the presence of ecological learning capability.

***(b) Path creation – the role of new environmental projects in exploring ecological knowledge***

Path creation competency relates to a firm's ability to generate new directions for growth and development which are unique to the organisation and may help it to become competitive and sustain that competitiveness (Dixon et al., 2013). Initiatives like new project selection, funding and implementation can underpin this capability. All these initiatives require sufficient financial resources and also involve making risky decisions. They also require another critical resource i.e. better human resources, such as environmentally competent owner-managers.

Environmentally progressive SMEs were much resource-rich, both financially and in terms of human resources. Thus they were proactively investing in new environmental projects that enabled them to search new environmental knowledge. Particularly, the foreign qualified owners and managers were competent enough to execute new environmental

projects personally. For instance, as the owner-manager of SME 15, who had completed a degree from the University of Northampton, narrated that he was working on new eco-friendly product development projects:

*'[...] I am also working on biogas. I have done some small-scale trials and those have been successful [...] the digester is developed and we just need to put in the materials' (SME 15).*

At the same time, respondent from SME 4 asserted that because their owner was foreign qualified and had better exposure to the needs and challenges of leather production business he was, therefore, open to invest in new environmental projects:

*'It all depends upon the management how they perceive things. These are all educated people. He himself graduated from Northampton, in 1964. Therefore they have a different vision' (SME 4).*

In contrast to environmentally progressive SMEs, not every environmentally moderate firm provided sufficient evidence for their involvement in path creation initiatives for advancing their ecological learning capability. Few of these firms, such as SME 10 and SME 12 that invested in new environmental projects their owners and/or managers had developed sufficient skills and a pro-environmental behaviour by attending environmental trainings, workshops and seminars that were often arranged by the intermediary organisations. Environmental investments for searching new ecological knowledge could be risky, but success could bring benefits such as the resource conservation and eco-efficiency (van Berkel, 2007). Therefore the selection, funding and implementation of new environmental projects became a routine in comparatively more growth-oriented SMEs in this category.

For instance, as the owner-manager of SME 12, who was quite eager to make his business more eco-friendly and boost exports, stated:

*'It is since 2005 that I have started to implement [environmental] practices [...] but of course that requires investment and that is not minor investment [...] risks are attached with some measures but if we take such risks that benefit us [...]'* (SME 12).

Similarly, owner-manager of another environmentally moderate firm, SME 10, whose owner-manager had similar aspirations, said:

*'The fact is that I keep working on such things [...], for example, if I have seen a better machine with someone else, I would take instant decision to invest in that. Although such instant decisions can be risky, I take such decisions for environmental improvement'* (SME 10).

Findings thus suggest that more progressive SME owner-managers explore ecological knowledge by investing in new environmental projects. Financial and human resources are critical factors to execute such investment decisions. New environmental projects enrich the ecological knowledge resources and advance the pollution prevention capability of SMEs (Hart, 1995) enabling them to adopt cleaner production practices proactively.

### **Section summary**

This section has presented findings about the presence of dynamic capability for ecological learning in environmentally progressive and moderate SMEs. The microfoundations on

which this environmental capability is built relate to the processes of knowledge exploitation and exploration. Every firm in the two categories advances its environmental knowledge resources through exploitation processes. However, the knowledge exploration processes remain the hallmark of environmentally progressive SMEs and only a few of the environmentally moderate firms that are resource-rich.

Inter-organisational collaborations are the most important vehicle for knowledge exploitation for leatherworking SMEs (Wassmer et al., 2014; Hofmann et al., 2012; Gold et al., 2010). Through such collaborations, these firms enter into learning networks, the environmental knowledge sharing mechanisms (Klewitz and Zeyen, 2010; Battaglia et al., 2010), which enable them to purposefully create, extend and modify their environmental knowledge resources by acquiring information from different actors, such as the intermediary organisations, input suppliers and educational and research institutes. This study hence suggests that social capital serves as a key microfoundation on which SMEs can build their dynamic capability for ecological learning (Blyler and Coff, 2003). The role of SME owner-managers also remains crucial for advancing this capability because they make critical decisions about investing in new environmental projects and engage their firms with R&D activities.

Idiosyncrasies are observed in the processes of knowledge acquisition across environmentally progressive and moderate SMEs in that they follow different pathways to ecological learning. While some learn from intermediary organisations and through undertaking in-house R&D, the others acquire ecological knowledge from input suppliers and research and educational institutes. However, all these different channels of learning underpin the presence of ecological learning capability, which carry similar implications



across firms. For example, this capability develops the 'eco-literacy' skills amongst the SME owners and managers drawing on which they understand and implement/follow the principles of environmental protections (Tilley, 2000). It also advances the 'sensing' capability (Teece, 2007) in SMEs enabling them to better understand the emerging environmental trends and requirements of different stakeholders such as the customers and regulatory authorities. Thus, this capability enables leatherworking SMEs to coevolve (Lewin et al., 1999; McKelvey, 1997) with their moderately dynamic market environment (Eisenhardt and Martin, 2000). This whole phenomenon highlights the 'equifinal' character of dynamic capability for ecological learning (Eisenhardt and Martin, 2000) in that the deployment of this capability ultimately leads to achieving one goal i.e. better environmental engagement of SMEs.

From the perspective of institutional theory (Section 2.6.1), this section has particularly highlighted the importance of environmental collaborations emanating from the interlocks between SMEs and intermediary organisations. The environmental support institutes, Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), have performed a 'proto-institutional' role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002). In the absence of formal environmental support mechanisms, for example from the Ministry of Environment, Ministry of Industries and Production, and other industry related departments of Pakistan government, they acted like (informal) compensatory institutional structures (Kolk, 2014) supporting the leatherworking SMEs for enriching their environmental knowledge resources to effectively adopt cleaner production practices. Findings thus suggest that firm level resource constraints might not limit the environmental engagement of SMEs provided they are driven to adopt environmental practices by raising the needed environmental resources from their networks.

### **6.3 Capability for seizing environmental opportunities**

Environmentally progressive and moderate SMEs also possessed the dynamic capability for seizing environmental opportunities. This capability was related to their ability to invest in the developmental and commercialisation activities for exploiting various environmental opportunities, such as the eco-efficiency benefits by innovating the products and processes. By deploying this capability SMEs in both categories purposefully allocated, reallocated, combined and recombined their resources through the firm level initiatives and/or environmental collaborations finding new value-enhancing combinations which enabled them to reduce their environmental footprints and exploit environmental opportunities simultaneously (Wassmer et al., 2014; Gold et al., 2010; Augier and Teece, 2009; Teece, 2007). This confirmed that environmentally progressive and moderate SMEs had an advantage-driven behaviour in that they were not only protecting the wider natural environment but also exploiting the attached economic opportunities (Sections 4.2.1 and 4.2.2).

The microfoundations on which this environmental capability was built comprised the:

- (a) processes of asset selection, reconfiguration and deployment for environmental adaptation,
- (b) sustainability-oriented process innovations.

Depending on the resource endowment of SMEs these processes displayed the patterns of similarities as well as variations across the firms and their categories. For example, environmentally progressive SMEs having sufficient resources invested in expensive cleaner technologies, whereas their less resource-rich counterparts, environmentally moderate

SMEs, could not afford to invest in very expensive technological assets. While multiple processes underpinned this environmental capability, it assumed the 'equifinal' character (Eisenhardt and Martin, 2000). For instance, by deploying this capability, leatherworking SMEs invested in different developmental paths (Teece, 2007) for advancing their environmental capacity. Some firms gave priority to developing human resources; the others were more keen to invest in cleaner technologies. Nevertheless, the ultimate outcome of these diverse environmental actions remained the reduction in environmental footprints of the firms and exploitation of environmental opportunities.

The next two subsections, 6.3.1 and 6.3.2, present findings about the microfoundations of the dynamic capability for seizing environmental opportunities.

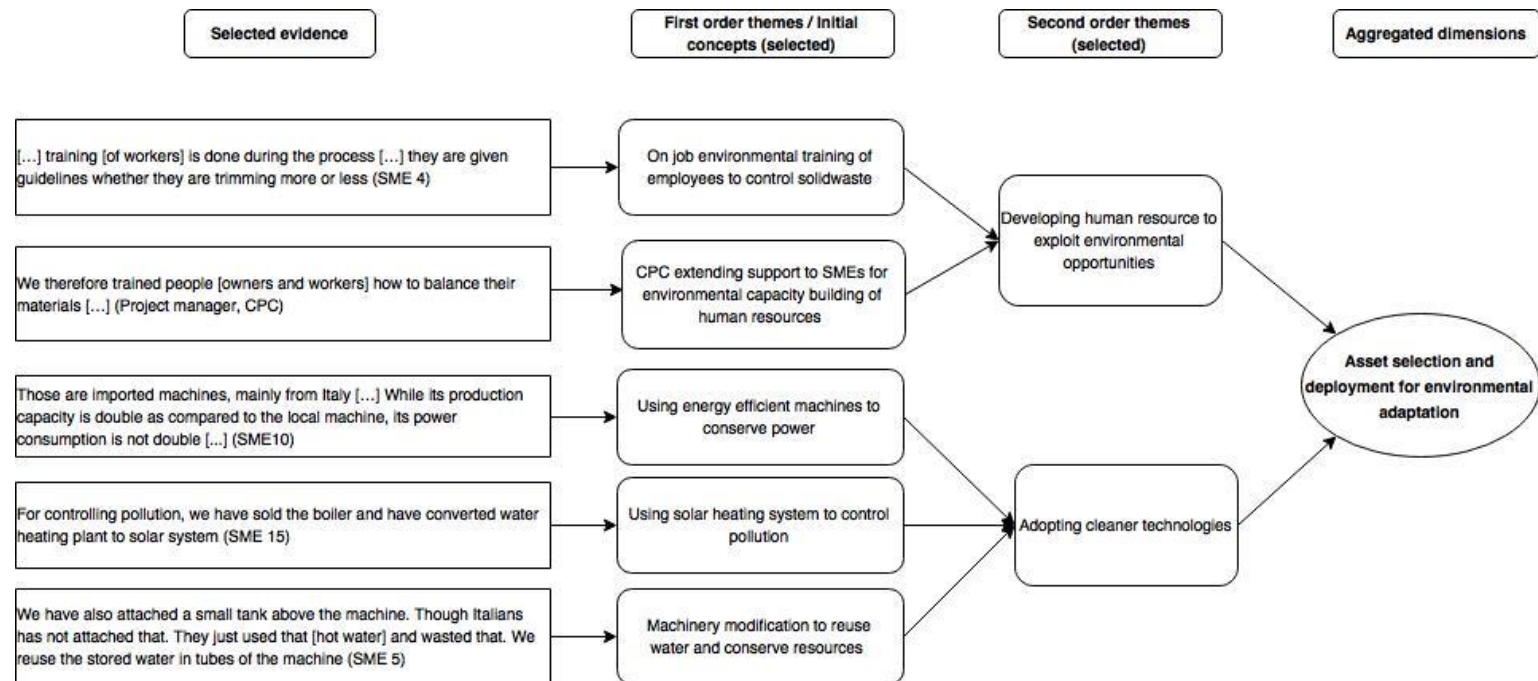
#### **6.3.1 Asset selection and deployment for environmental adaptation**

Having undergone ecological learning (Section 6.2) environmentally progressive and moderate SMEs identified various environmental opportunities. These opportunities were there, for example, in the form of serving environmentally sensitive customers who were happy to pay a higher price for the leather products produced through eco-friendly processes. These firms could also reap the eco-efficiency benefits, such as the conservation of resources by improving the input intensity of processes (van Berkel, 2007). For exploiting such opportunities, environmentally progressive and moderate SMEs needed to adapt to the dynamic market environment that was largely shaped by various international factors such as the environmental requirements of foreign buyers, regulations of export markets and emerging best practices for producing eco-friendly leather (Section 5.3). As noted earlier (Section 5.3), operating in tandem, these factors made the business environment for Pakistan's leatherworking SMEs moderately dynamic because they were not pushing for

change in the environmental standards and practices abruptly but gradually. Adaptation to changes in the business environment was necessary for leatherworking SMEs to remain competitive environmentally and seek legitimacy of their survival. Environmentally progressive and moderate SMEs, therefore, set out to internalise the acquired ecological knowledge and developed their assets. They focused on advancing the 'eco-literacy' skills (Tilley, 2000) of their human resources and alongside invested in cleaner technologies. However, this all happened in an incremental manner rather than assuming a radical pattern (Parry, 2012). Adaptation to the changes in business environment showed that SMEs in both categories possessed the absorptive capacity, which relates to a firm's ability to recognise the value of new, externally situated knowledge, assimilate that, and apply that to the commercial ends (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990). The presence of absorptive capacity thus appeared to be a precursor to the dynamic capability for seizing environmental opportunities.

Figure 6.3 displays 'data structure' capturing the mechanisms that underpin the theme asset selection and deployment for environmental adaptation (Gioia et al., 2013), which is identified as a microfoundation for the dynamic capability for seizing environmental opportunities. Next two subsections present findings about how environmentally progressive and moderate SMEs developed their human resources and adopted cleaner technologies in order to adapt to the changes in the moderately dynamic market environment for exploiting environmental opportunities.

**Figure 6.3: Data structure for asset selection and deployment for environmental adaptation**



Source: Developed by the researcher.

**(a) Developing human resources - environmental education and training of employees**

The environmental education and training of employees was one of the key factors that underpinned the dynamic capability for seizing environmental opportunities in environmentally progressive and moderate SMEs. Firms in both categories took various measures for raising the level of 'eco-literacy' skills of their employees (Lee, 2009; Gadenne et al., 2009; Tilley, 2000). They developed their environmental skills through the on job trainings, daily informal discussions, lectures and workshops, which enabled them to better understand and implement/follow the principles of environmental protection.

For example, in SME 4, one of the environmentally progressive firms, the environmental capacity building of human resources happened through on the job training. It was because this firm had better well-qualified owner and managers. The owner of this firm had attained a degree in leather technology from Northampton University: *'He himself graduated from Northampton, in 1964' (SME 4)*. And its manager was also a graduate from the same university in leather technology, who asserted that:

*'[...] training [of workers] is done during the process [...] they are given guidelines whether they are trimming more or less. Every effort is made to have minimum trimmings [...]' (SME 4).*

Similarly, the owner-manager of environmentally progressive SME 15, who had also attained a degree in leather technology from Northampton University UK, was personally working on the environmental capacity building of his human resources. He asserted that it was beneficial for him to recruit young workers who were easy to train environmentally as per the needs of his business and such workers charged less for their services:

*'I have personally trained the workers to operate the new machinery [eco-friendly machines, such as roller-coating]. I hire only fresh diploma holders. On the one hand, their salary is lower and when they are trained for 2 to 3 years they perform very well. I do not hire trained workers. I pay lower wages and train them personally' (SME 15).*

Not all the environmentally progressive SMEs had the in-house knowledge to provide environmental training for their employees. For example, SMEs 13 and 19 used the training offered by the environmental support institutes in a similar way to most environmentally moderate firms. They developed their eco-literacy skills locally, for instance, by attending the trainings and workshops of environmental support institutes, such as the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), and cascaded that knowledge and training amongst their human resources.

*'We train our employees according to the European standards and customer requirements [...] Whatever the CPC and Environment department tell, our foreman gives the awareness about that to our employees [...]' (SME 9).*

*'[...] we keep advising them [...] It does not happen every month. But after about two or three months new information is disseminated [by CPC], which we learn and share with our employees' (SME 11).*

On the same topic, owner-manager of SME 6, another environmentally moderate firm, said:

*'When I go somewhere or attend some event to learn things, on returning, I call them [labour] and share my learning [...] I tell them about the [eco-efficient] processes that I learn. I also tell them that if we modify our processes how that will save our resources. So, they try to adopt the new processes' (SME 6).*

Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), by deploying their human and financial resources, extended considerable support to leatherworking SMEs for the environmental capacity building of human resources. These institutes collaborated with leatherworking firms and by performing a proto-institutional role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) strived to institutionalise cleaner production in Pakistan's leather industry. For example, as also illustrated earlier (Section 6.2.1(a)), the project manager from CPC stated:

*'[...] we used to conduct the input-output analysis of tanneries [...] We, therefore, trained people how to balance their materials [...] for two to three years, [we] also hired the professionals, leather technologists, to keep a follow up to observe where the tanneries were facing problem in the implementation of new processes. If they faced any problem, we helped them to solve that' (Project manager, CPC).*

To summarise, SMEs, especially the environmentally moderate firms, did not have to invest their economic resources for diffusing environmental knowledge amongst their workers. The information needed to educate and train them was externally available (Section 6.2.1). By investing their time resources, SME owner-managers acquired the outside ecological



knowledge and disseminated that within their firms. This refers to the presence of absorptive capacity in environmentally progressive and moderate SMEs (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990). The proto-institutional actors (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002), CPC and CPI, also provided sufficient support for the training of SME workers. This compensated for the financial resources that SMEs, like environmentally moderate firms, were to leverage if they had to develop the environmental capacity of their staff themselves. These findings appreciate the value of environmental collaborations (Wassmer et al., 2014) for less resource rich but environment concerned SMEs to advance the environmental capacity of their human resources.

#### ***(b) Adopting cleaner technologies***

The adoption of cleaner technologies was vital for environmentally progressive and moderate SMEs, first, to prevent indiscriminate discharge of effluents that could harm the wider natural environment and, second, to achieve eco-efficiency goals. Therefore, SMEs in both categories made purposeful environmental investments in cleaner technologies. Nevertheless, depending on their resource endowment, the nature of cleaner technologies varied across the firms and categories.

For instance, environmentally progressive SMEs having sufficient economic resources invested in expensive advanced technologies, like the roller-coating machines, solar heating systems and effluent treatment plants, which enabled them to reduce their environmental footprints. For instance, owner-manager of SME 15 asserted that the roller-coating machine and solar heating system enabled them to control not only pollution but also conserve resources:

*'Instead of using a spraying plant, we have fitted a roller-coating machine. That has zero percentage wastage for environment i.e. [colour] gets 100 percent penetration into leather [...] we used to run boiler with furnace oil and furnace caused pollution. In order to remove that, we have fitted a solar system [...]' (SME 15).*

Similarly, the respondent from SME 4 said that solar heating system proved useful for them to reduce their environmental footprints:

*'[...] we have fixed solar tubes for water heating [...] we can have sufficient hot water from there. The use of boiler has reduced' (SME 4).*

To offer some additional evidence, SME 4 and SME 15 had major export concerns, and they were pushed by their international buyers, in addition to the sustainability values of their owner-managers, to adopt eco-friendly production processes (Section 5.3). Thus they had also set up their own effluent treatment plants. Installation of such plants, which is an example of end-of-pipe technologies (Frondel et al., 2007), not only requires sufficient financial resources but also technically sound human resources are needed to run and maintain these. Thus, only those SMEs which had knowledgeable owners, managers and staff, and were not financially constrained could develop this facility on their sites.

*'[...] where tanneries are in the form of a cluster, people have tried to have a combined effluent treatment plant because the cost of treatment plant is too high [...] The area where we are placed, [...] we are alone [...] So, we have installed it [wastewater treatment plant] on individual basis' (SME 4).*

*'[...] we have recently installed the wastewater treatment plant [...] major source of pollution load in our tannery is wastewater, at the stage of drumming. There we have adopted the practice of screening. After the process of screening, we then treat the wastewater. In doing so, we try to control its acidity and PH. We control TDS and heavy metals [...] and then discharge that' (SME 15).*

In contrast, environmentally moderate SMEs that lacked the financial, technical and human resources needed to set up firm level effluent treatment plants, but were situated in clusters, such as SME 2, SME 5 and SME 20, they adopted the 'coopetition' approach [cooperation between competitors] (Daddi et al., 2010; Biondi et al., 2002). By effectively using their social capital (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Coleman, 1988) and alliance formation skills they entered into environmental collaborations (Wassmer et al., 2014) and through pooling their limited financial resources collectively contributed to the development of combined effluent treatment plants, such as in Kasur and Karachi clusters (Section 1.5). These effluent treatment plants proved very helpful for addressing the issues of environmental degradation at a larger scale and attracted more business for SMEs from international markets because now they could show their customers that they had taken end-of-pipe pollution treatment measures. For example, as the owner-managers of SME 5 and SME 20 said respectively:

*'[...] a big treatment plant is now there. There was a time when you could not see a single crop in the surroundings. Now we can have*

*crops [...] the establishment of treatment plant is a big positive step*

*[...]' (SME 5),*

*'[...] with reference to the plant [common effluent treatment plant], we*

*were given training that lesser the float we would generate better it*

*would be [...]' (SME 20).*

Cluster level environmental innovation, combined effluent treatment plant, is a good example of developing collaborative technological assets by entering into alliances (Bowman and Collier, 2006) and collectively addressing environmental challenges while also receiving techno-economic benefits (Montalvo, 2008). Through such environmental collaborations, SMEs can indeed overcome the financial, technological and human resource barriers limiting their effective environmental engagement. These findings also support the literature arguing for adopting cluster based approaches to enable resource deficient SMEs to take collective measures for effectively reducing their environmental footprints (de Oliveira and Jabbour, 2015; Martínez-del-Río and Céspedes-Lorente, 2014; Weltzien Høivik and Shankar, 2011; Daddi et al., 2010; Battaglia et al., 2010).

It is noteworthy that in Pakistan, building on the successful experiences of Kasur and Karachi clusters, development of a third combined effluent treatment plant is in progress in Sialkot Tannery Zone (PGMEA, 2010-2011). In addition to some financial support from the provincial government, leather manufacturing firms, the majority of which are SMEs, have collaborated to share the financial cost of installing that plant. SMEs had high hopes that the development of combined effluent treatment plant in Sialkot region would help them to become environmentally compliant and responsible firms, while also enabling

them to exploit environmental opportunities internationally. For example, as a respondent from Sialkot region said:

*'You might know that a tannery zone will be established here [in Sialkot]. I have also applied for that and will be moving there. It will help us achieve better quality measures to satisfy our customers. It will also be better for our future' (SME 8).*

Such cluster level environmental innovations could also help SMEs develop their symbolic capital which they could use as a marketing tool for attracting more business (Shaw et al., 2008; Fuller and Tian, 2006; Gergs, 2003). For example, as the project manager of Sialkot Tannery Zone (STZ) also said:

*'When you go back to your university, please disseminate information about this project [Sialkot Tannery Zone] because we want that this project should be used as a marketing tool for the leather industry of Pakistan [...]' (Project manager, STZ).*

In addition to the collaborative investments in end-of-pipe technologies (Fronzel et al., 2007), environmentally moderate SMEs also made some other technological investments for conserving their resources and controlling pollution at source. For instance, some of these firms, such as SME 12, invested in steam generators for heating water. Such steamers needed *'lesser energy compared to a boiler'* (SME 12) but could give better production. Similarly, other firms from this category, such as SME 5, had replaced the conventional boilers with modern industrial boilers which were believed to have limited environmental impacts. Such environmental investments, compared to an effluent treatment plant, were financially much lesser intensive.

*'To a greater extent, our machinery helps us in adopting cleaner processes [...] There are disadvantages of using wood. First, it damages the environment. Second, the working environment of factory gets upset due to smoke. Third, the quality that can be produced with the heat of gas or LPG that cannot be achieved with that [wood-run boiler]. We have therefore searched a second hand Korean boiler, an industrial boiler. We run it on LPG. That does not generate smoke or cause any other issues' (SME 5).*

Environmentally progressive and moderate SMEs had established faith in using imported machinery for achieving eco-efficiency. For example, as the owner-managers of SME 13 (an environmentally progressive firm) and SME 10 (an environmentally moderate firm) said respectively:

*'These [imported machines] are very energy efficient. Really, they are wonderful in terms of quality, innovation and electric consumption' (SME 13),*

*'[...] I have purchased those machines that have double production capacity [...] Those are imported machines, mainly from Italy [...] While its production capacity is double as compared to the local machine, its power consumption is not double [...]' (SME10).*

Some of the firms in both categories had also adopted the strategy of modifying existing machines to become eco-efficient. In the category of environmentally progressive SMEs, owner-managers who were better qualified and had the know-how to personally modify machines led this initiative. For example, as already stated earlier in Chapter 4 (Section

4.2.1(e)), owner-manager of SME 15 who had developed his technical skills by acquiring a degree in leather technology, had modified some machines according to their business needs.

In contrast, in the category of environmentally moderate firms, these were not the owner-managers themselves who modified the machines. They rather achieved this with the help of independent private consultants. For instance, as the following evidence from SME 5, SME 6 and SME 7 illustrate that these firms saved resources like water and energy by modifying their technological assets with the support from private consultants and this also enabled them to reduce their environmental footprints.

*'We have also installed a small tank above the machine. Though Italians had not installed that. They just used that [hot water] and wasted that. We reuse the stored water in the tubes of the machines' (SME 5).*

*'It [drying chamber] is run with gas and electricity [...] we purchased it locally, but later on modified it according to our needs. For example, the size of hides that we processed was larger and we had to change the sides of hides quite frequently so we enlarged the size of the room [drying chamber]' (SME 6).*

*'We have saved a lot by adopting that. Earlier, we used to run boiler with diesel, then it was converted to gas, and then they [the technical experts] introduced the direct heating system' (SME 7).*

One of the environmental support institutes, Cleaner Production Centre (CPC), had not only been educating SME owners, managers and workers about cleaner technologies, at the initial phases of its interventions, it also distributed some relatively simple and less expensive technologies, such as the dust collectors and water flow meters, at no cost amongst resource deficient firms. The proto-institutions thus also helped leatherworking SMEs to advance their dynamic capability for seizing environmental opportunities. For example, as the project manager of CPC said:

*'No cost for them [for water meters]. It was only towards the ending phase of the project that I started to motivate people and asked for minor contributions [...]' (Project manager, CPC).*

Respondents from leatherworking SMEs also confirmed about such a support from environmental institutes. For example, as owner-managers of two of the environmentally moderately firms, SME 11 and SME 14, said respectively:

*'[...] they guided people a lot about this. For example, they provided dust collectors to the smaller units' (SME 11).*

*'Then a foreign country also provided funding for establishing CPC. Then they also established a lab there for chemical testing. They also fitted water meter in our tannery. The purpose was to analyse if the extra water was used then how to minimise that' (SME 14).*

The main purpose of CPC behind extending such a support was to demonstrate SMEs that the adoption of cleaner technologies was beneficial for them so that they could start taking environmental measures proactively. In some instances, environmental collaborations thus



also enabled some of the resource deficient, environmentally moderate SMEs to reconfigure their technological assets without even investing any financial resources.

In summary, depending on their resource endowment, leatherworking SMEs either adopted cleaner technologies at the firm level, or they adopted a coopetition approach (Daddi et al., 2010; Biondi et al., 2002) and collaborated with their peers to develop collective technological assets. In certain instances, proto-institutional actors (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002), such as CPC, also assisted these firms, especially the resource deficient environmentally moderate SMEs, in developing their technological assets. Whatever means these firms chose to select and deploy technological assets, the underlying purpose remained to exploit environmental opportunities such as eco-efficiency benefits. Overall, findings from Pakistan's leather industry confirm that 'firms operating in countries with lax environmental regulations, but serving mature global markets with a preference for environmentally sound products are more likely to embrace cleaner technologies' (Montalvo, 2008: p. S9).

### **6.3.2 Implementing sustainability-oriented process innovations**

The existence of dynamic capabilities requires 'the creation, integration, and commercialization of continuous stream of innovation consistent with customer needs and technological opportunities' (Teece, 2007: 1343). The kind of innovation this section focuses on, as a microfoundation of dynamic capability for seizing environmental opportunities, relates to the process based environmental innovations. Such sustainability-oriented innovations enabled the environmentally progressive and moderate leatherworking SMEs to reduce the input intensity of their production processes, which

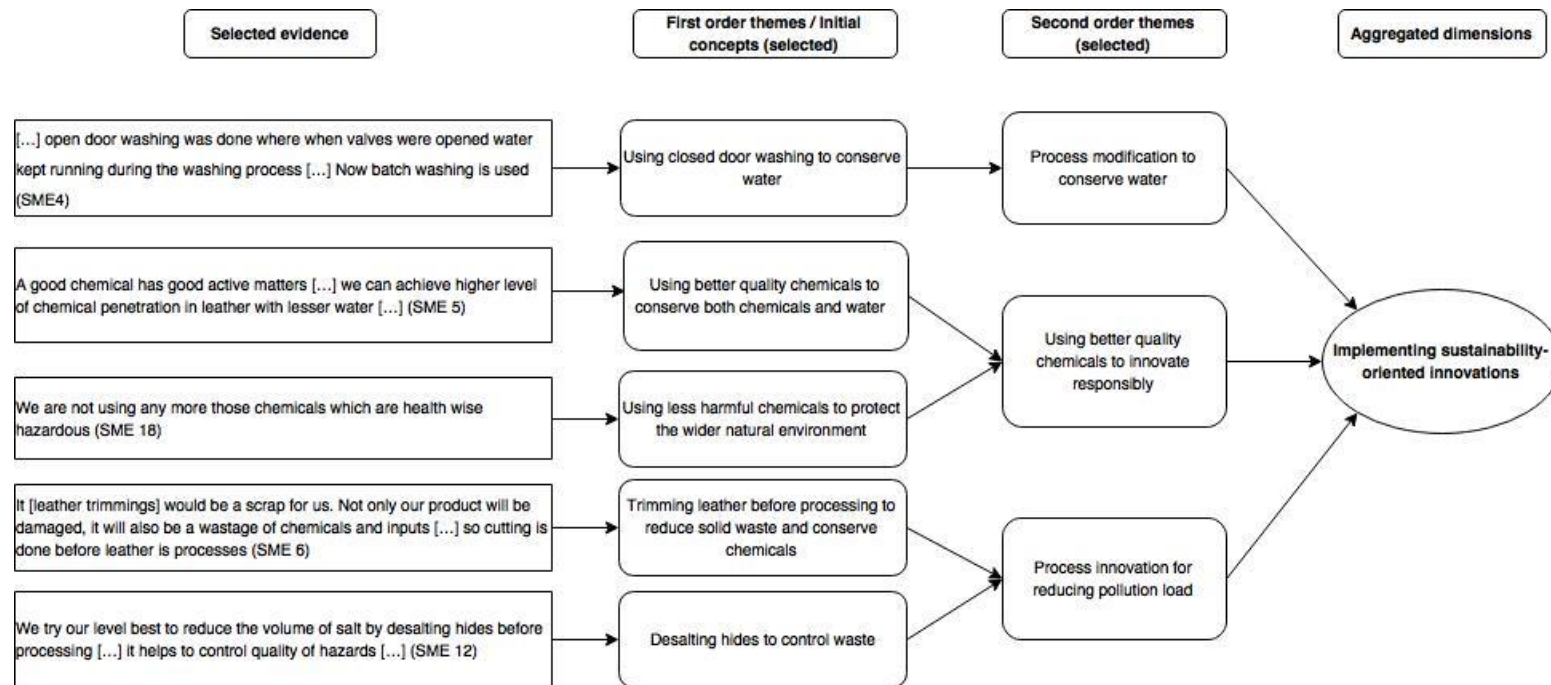
allowed these firms to simultaneously reduce their environmental footprints and achieve eco-efficiency benefits (Halme and Korpela, 2014; van Berkel, 2007).

Every environmentally progressive and moderate firm had developed ecological learning capability for acquiring environmental knowledge resources (Section 6.2). For internalising these resources, they developed human resources and also reconfigured their technological assets (Section 6.3.1). All these environmental developments served as cornerstones for implementing sustainability-oriented process innovations in these firms, making their production processes eco-friendly and eco-efficient (Ortolano et al., 2014; van Berkel, 2007).

Environmentally progressive and moderate SMEs incrementally implemented the sustainability-oriented process innovations rather than adopting a radical approach (Parry, 2012; Bos-Brouwers, 2010; Van Berkel, 2000). It is noteworthy that, in addition to the need to satisfy environmentally sensitive stakeholders, now ecological learning experiences also started driving these firms to reconfigure their production processes for implementing sustainability-oriented innovations proactively. It was because they had realised that environmental innovations would bring them both economic and competitiveness benefits.

Figure 6.4 displays 'data structure' for illustrating the patterns of emergence of theme sustainability-oriented innovations (Gioia et al., 2013). The remainder of this subsection present main findings about the factors that underpin process based eco-innovations in environmentally progressive and moderate SMEs.

**Figure 6.4: Data structure for sustainability-oriented innovations**



Source: Developed by the researcher.

Environmentally progressive and moderate SMEs were cognisant of finding innovative ways to reduce input intensity of their production processes for becoming eco-efficient. This realisation came to them through ecological learning (Section 6.2). It is of considerable attention though that these were not only the environmentally progressive and moderate SMEs that were reconfiguring their production processes to conserve resources such as water and chemicals, environmentally distanced firms had also adopted such measures. However, as noted earlier (Section 4.2.3), environmentally distanced SMEs were only led by the economic logic while taking such measures. All the firms in this category were situated in tannery clusters (SME 1 and SME 3 in Kasur cluster, and SME 20 and SME 21 in Karachi cluster), which had common effluent treatment facilities. The plant management were charging them for treating their contaminated water. Consequently, these firms were keen to improve their processes to conserve water for reducing their utility bills. For example, as owner-manager of SME 1 asserted:

*'They [management of effluent treatment plant] charge for water drained from the tannery [...] we have given attention to this issue [...] We have become more careful, we avoid wasting water' (SME 1).*

In contrast to this category, environmentally progressive and moderate SMEs aspired protecting the wider natural environment by adopting water conservation strategies. Firms in both these categories had adopted almost similar water conservation processes, the adoption of which was underpinned by the pollution prevention capability. As a reminder, this capability relates to the ability of the firm to prevent waste and reduce emissions from

its production processes (Hart, 1995). To illustrate, as the respondent from SME 4, one of the environmentally progressive firms, asserted that through ecological learning:

*'[...] we realised that first of all we need to reduce it [...] because using water itself was a cost [...] we reduced that [...] floors were washed with plenty of water [...] valves were leaking [...] perhaps, the float change was not even needed [...] There are many processes, where fresh water was not needed [...] open door washing was done [...] gradually, that was stopped. Now batch washing is used' (SME 4).*

He also said:

*'With the reduction in the volume of water, the concentration level of chemicals rises. So, production process becomes more [eco] efficient' (SME 4).*

Similarly, owner-manager of an environmentally moderate firm, SME 6, for instance, narrated that they were able to conserve water by adopting closed-door washing processes:

*'I learned different practices for controlling the usage of water [from CPC] [...] we properly check that where the leakage is happening and that leakage should be stopped. Or if some pipe [is] damaged that should be changed [...] When leather is processed it needs washing [...] opened-door washing results in wastage of water so we have adopted closed-door washing' (SME 6).*

The above representative evidence from environmentally progressive and moderate SMEs suggests that sustainability-oriented process innovations assumed an incremental pattern of emergence in these firms (Bos-Brouwers, 2010). Over time, they kept learning about cleaner production practices and in the process, they internalised this learning. It confirms the presence of absorptive capacity in SMEs in both categories (Lewin et al., 2011; Cohen and Levinthal, 1990). As noted earlier (for example, Section 6.3.1), absorptive capacity relates to a firm's ability to recognise the value of new, externally situated knowledge, assimilate that, and apply that to the commercial ends (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990). The presence of absorptive capacity thus served as a precursor for the dynamic capability for seizing environmental opportunities.

Sustainability-oriented process innovations in environmentally progressive and moderate SMEs also happened through purposeful efforts to conserve chemicals. These firms were using better quality chemicals, which were generally imported from Europe. Particularly the export-oriented SMEs, such as SME 2, SME 4, SME 5 and SME 15, were consistently reconfiguring their production processes by replacing locally produced environmentally harmful chemicals with imported less harmful ones. The imported chemicals were appreciated for having better penetration level in that maximum chemicals would penetrate into leather with lesser use of water and very little of these would be discharged with wastewater. For instance, as one of the respondents from environmentally progressive firms, SME 4, narrated:

*'Some are Germans and some are Italian suppliers, [...] They give us guidelines that this chemical is good and this would be needed in*

*lesser amount, and it would run well with lesser volume of water or its fixes better, it has lower COD and BOD values [...]' (SME 4).*

Similarly, one of the owner-managers of environmentally moderate firms, for example, SME 5, asserted:

*'A good chemical has good active matters [...] we can achieve a higher level of chemical penetration in leather with lesser water [...] the chemicals that we use are 99.99 percent REACH certified – European compliance. We use German, Italian and Spanish chemicals [...]' (SME 5).*

The above representative evidence suggests that environmentally progressive and moderate SMEs had developed the product stewardship capability (Hart, 1995), which enabled them to establish responsible supply chains by buying environmentally less harmful chemicals from environmentally responsible European chemical companies. The findings also refer to the presence of the strategic proactivity (Aragón-Correa et al., 2008) in these SMEs because they purposefully use environmentally less harmful chemicals for attracting more business from environmentally sensitive international buyers and meeting the environmental requirements of some other stakeholders as well such as the regulatory authorities.

Environmentally progressive and moderate SMEs had the realisation to minimise the presence of chrome VI in their products and discharges in order to limit its negative impacts on the wider natural environment. In fact, a higher percentage of chrome VI in leather is banned because it can be carcinogenic (PGMEA, 2009-2010). For instance, as the owner-manager of SME 13, one of the environmentally progressive firms, said:

*'Initially, we set up a chrome recovery system but then after doing some research we learned how to achieve maximum penetration of chrome in the drum during a process' (SME 13).*

Similarly, two of the respondents from environmentally moderate firms, for instance from SME 16 and SME 18, asserted receptively:

*'The process change is about chemical adjustment [...] there is a research that the more chrome you use the more chances are there for it to remain in an article [...] so this is where we have changed the process that instead of directly adding chrome to the process, we run it with certain chemicals [...]'* (SME 16).

*'[...] we have reduced the level of contamination a lot [...] through REACH compliance because our chrome content, which is more dangerous, we have very limited quantity of chrome in the fluid [...]'* (SME 18).

While operationalising the sustainability-oriented innovations, environmentally progressive and moderate SMEs adopted the 'cooperation strategy' (Bönte and Dienes, 2013) in that they learned about eco-innovations through their networks, such as through their collaborations with the environmental support institutes, input suppliers, research and educational institutes (Section 6.2). And their absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) enabled them to diffuse the learned processes through the training of human resources and reconfiguration of technological assets (Section 6.3.1). For instance, as also illustrated earlier (Section 4.2.1(d)), the owner manager of SME 13 said:



*'[...] they guided us, alongside this project [combined effluent treatment plant in Kasur], lectures about in-house improvements were arranged. They informed about desalting [...] We learned about the proper RMP, temperature maintenance and the PH level required for better chrome penetration. All such awareness came to us through that project' (SME 13).*

Similarly, two of the environmentally moderate firms, for instance, SME 7 and SME 17, also mentioned about their collaborations with environment support institutes and chemical suppliers enabling them to adopt the sustainability-oriented process innovations and thus advance dynamic capability for seizing environmental opportunities.

*'Although our staff was already educated, they [CPC] trained them about using the chemicals in a better way so that minimum chemicals are drained with water' (SME 7).*

*'[...] the main source of learning is the chemical suppliers. We have to discuss with them the problem that we face while manufacturing gloves [...] We follow the processes that they give us' (SME 17).*

Project manager of Cleaner Production Centre (CPC) also confirmed that they had been supporting leatherworking firms to learn and operationalise eco-efficient process innovations. The evidence presented earlier (Section 6.2.1(a)) offer support this point also:

*'[...] we used to conduct the input-output analysis of tanneries [...] We, therefore, trained people [owners and workers] how to balance their materials [...] for two to three years, [we] also hired the*

*professionals, leather technologists, to keep a follow up to observe where the tanneries were facing problem in the implementation of new processes. If they faced any problem, we helped them to solve that' (Project manager, CPC).*

These findings reinforce the value of social capital for those SMEs that aspire to adopt sustainability-oriented process innovations but do not have enough knowledge about such processes. Through inter-organisational collaborations (Halme and Korpela, 2014; Parry, 2012; Hoffman et al., 2012), like networking with the environmental support institutes and input suppliers, they can learn and diffuse eco-innovations.

To summarise, sustainability-oriented process innovations enable environmentally progressive and moderate SMEs to become eco-efficient and environmentally responsible businesses, for example by controlling the input intensity of their processes and using less harmful inputs. Capabilities like the pollution prevention, product stewardship (Hart, 1995), strategic proactivity (Aragón-Correa et al., 2008), inter-organisational collaborations (Halme and Korpela, 2014; Parry, 2012; Hoffman et al., 2012) and absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) serve as precursors to owning and operationalising sustainability-oriented process innovations, which underpin dynamic capability for seizing environmental opportunities.

### **Section summary**

This section has presented findings about the dynamic capability for seizing environmental opportunities in environmentally progressive and moderate SMEs. This capability allows leatherworking firms to find new value-enhancing combinations by purposefully allocating, reallocating, combining and recombining their resources through the firm level

initiatives and/or environmental collaborations. This, in turn, enables them to reduce their environmental footprints and exploit environmental opportunities simultaneously, by becoming eco-efficient.

The simultaneous advancement in eco-literacy skills of human resources, reconfiguration of technological assets, and implementation of sustainability-oriented processes innovations shows that environmentally progressive and moderate SMEs have the ability to adapt to their moderately dynamic market environment, which is shaped by the gradual changes in environmental requirements of various stakeholders, for example, the customers and formal (regulatory bodies) and informal institutional forces (environment support institutes).

Absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) serves as a precursor to the presence of dynamic capability for seizing environmental opportunities. Better qualified owners and managers (Gadenne et al., 2009) and social capital (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Coleman, 1988) also serve as seedbeds for the deployment of this environmental capability. Environmentally knowledgeable SME owners and managers are better positioned to appreciate the value of cleaner production and therefore do not hesitate to develop human resources, technological assets and implement sustainability-oriented process innovations. Environmental collaborations of SMEs, for example with environmental support institutes, assist them in creating, modifying and reconfiguring their assets and internalising the acquired environmental knowledge for exploiting environmental opportunities (Wassmer et al., 2014; Gold et al., 2010; Fuller and Tian, 2006). Some other capabilities, such as the pollution prevention, product stewardship and strategic

proactivity (Aragón-Correa et al., 2008; Hart, 1995) also serve as precursors to the presences of this environmental capability suggesting that the deployment of dynamic capability for seizing environmental opportunities is consequential (Eisenhardt and Martin, 2000). Also, the interlocks between the microfoundations of dynamic capabilities for ecological learning and opportunity seizing show that these capabilities reinforce each other's deployment rather than operating as piecemeal environmental enablers for leatherworking SMEs.

#### **6.4 Enterprise reconfiguration capability**

Dynamic capability for enterprise reconfiguration can enable businesses to coevolve with the changes in their business environment and therefore sustain performance by continuously reconfiguring their existing routines and capabilities (Teece, 2007; Lewin et al., 1999; McKelvey, 1997). By deploying this capability, enterprises can maintain their 'evolutionary fitness' (Helfat et al., 2007) in that they can sustain the competency to make their living and remain competitive in the market. This capability can also capacitate firms to 'escape from unfavourable path dependencies' (Teece, 2007, p. 1335), which otherwise may push them into a capability trap (Siggelkow and Levinthal, 2005) and limit their growth. Progressive firms through the continuous or semi-continuous asset orchestration and redesigning of routines (Teece, 2007, p. 1335) can, therefore, escape from entangling into a capability trap (Siggelkow and Levinthal, 2005). Indeed, enterprise reconfiguration requires firms to display strategic proactivity (Aragón-Correa et al., 2008), a capability which relates to a firm's ability to initiate changes in its practices and processes proactively rather than just reacting to events in its business environment.

Environmentally progressive and moderate SMEs were well aware of the need to reconfigure them. They believed that it would enable them to coevolve (Lewin et al., 1999; McKelvey, 1997) with the emerging environmental trends in the industry and effectively meet the environmental requirements of different stakeholders such as the customers and formal and informal regulatory authorities. To illustrate, as the owner-manager of SME 13, an environmentally progressive firm, said:

*'[...] if new information and technology are introduced, an industry cannot survive without owning that, whether that is done instantly or gradually. We also adopt that and those who are more organised than us they adopt that faster. But it is hard to survive without that' (SME 13).*

Some important highlights are attached to the above quotation. First, this statement was made by an entrepreneur who was in leather business since 1971, one of the oldest businesses in the sample (Table 3.4). Thus, his opinion was informed by the vast industry related observations and experiences. Second, as an active member of Pakistan Tanners Association (PTA), he had been interacting with a number of local and international consultants interested in the environmental capacity building of SMEs in the leather industry. This experience exposed him to the environmental behaviour of a wider community of leatherworking SMEs in the country. Being a staunch believer of protecting the wider natural environment, he had offered commendable services to the team of consultants who set up combined effluent treatment plant in Kasur region. He helped them in gathering data about the level of contamination from SMEs in Kasur cluster, which

broadened his own perspective about environmental issues and the means to address those:

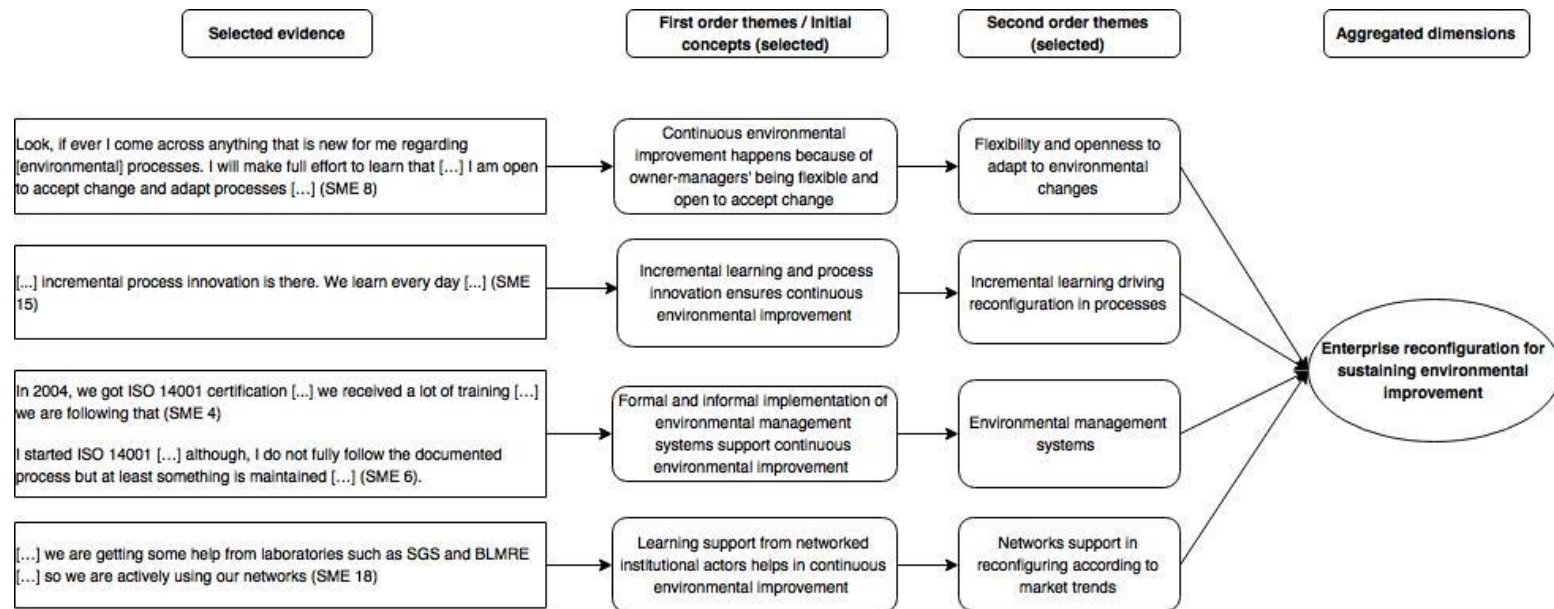
*'Then on the appeal of leather association, the Dutch, Norwegians and UNIDO came forward and worked on the designing of the treatment plant [...] They made the drawings, did R&D and started to work on that [...] I was part of the team that conducted the first survey in Kasur' (SME 13).*

To a greater extent, his opinion can, therefore, be regarded as not only a reflection of the environmental priorities of his own unit but also of other SME owner-managers. Third, the acquisition and diffusion of new environmental information and cleaner technologies that he referred to were clearly different from what SMEs already possessed, the ones they had developed by drawing on their existing ecological learning and opportunity seizing capabilities. He pointed towards advancing the existing absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) in order to acquire and internalise more advanced environmental knowledge and technological resources, which could enable leatherworking firms to renew their existing set of dynamic capabilities for environmental improvement and effectively adapt to the moderately dynamic market environment. Finally, he also referred to the differences in resource and capability endowment across leatherworking firms. Such differences are already highlighted in this study at different points. For example, in Section 6.2 it was discussed that ecological learning through knowledge exploration seemed to be a hallmark of resource rich, environmentally progressive SMEs. However, that did not mean that resource deficient environmentally moderate SMEs would not be able to have access to new environmental

knowledge. Some of these firms had successfully achieved this milestone by entering into environmental collaborations (Wassmer et al., 2014; Hofmann et al., 2012; Gold et al., 2010) that compensated for their resource deficiency and provided them access to latest environmental knowledge. Nevertheless, as findings of this section would show, compared to their resource poor counterparts (environmentally moderate firms), resource rich environmentally progressive SMEs were better positioned to have dynamic capability of enterprise reconfiguration.

Figure 6.5 displays 'data structure' informing the identification of dynamic capability for enterprise reconfiguration in environmentally progressive and moderate leatherworking SMEs (Gioia et al., 2013). Findings about this environmental capability and its microfoundations including flexibility and openness of SMEs to accept change, their incremental learning ability, environmental management and network support for reconfiguration are presented below.

**Figure 6.5: Data structure for enterprise reconfiguration capability**



Source: Developed by the researcher.



#### 6.4.1 Flexibility and openness

Routines help firms to 'sustain continuity until there is a shift in the environment' (Teece, 2007, p. 1335). The business environment for SMEs in Pakistan's leather industry was not static but was moderately dynamic. It was largely shaped by the emerging customers' environmental requirements, international regulations and best international standards and practices to produce leather in an eco-friendly way (Section 5.3). In order to coevolve (Lewin et al., 1999; McKelvey, 1997) with and adapt to their moderately dynamic business environment, environmentally progressive and moderate SMEs needed to advance their ecological knowledge and innovate production processes on a continuous basis. Flexibility and openness can enhance the learning, innovation and adaptation potential of SMEs for sustained environmental improvement (Klewitz and Hansen, 2014; Bos-Brouwers, 2010). It was much evident in environmentally progressive and moderate SMEs. Respondents from both categories described of their firms being flexible and open to continuous environmental learning and adaptation to changes in the organisational field. For example, as respondents from SME 4 and SME 15, two of the environmentally progressive firms, said:

*'[...] we are open to accept change. It all depends upon the management how they perceive things. These are all educated people. He [owner-manager] himself graduated from Northampton, in 1964. Therefore they have a different vision' (SME 4).*

*'The incremental process innovation is there. We learn every day' (SME 15).*

Similarly, owner-managers of SME 6, SME 7 and SME 8, three of the environmentally moderate firms, for instance, also stated:

*'[...] if CPC introduced any latest [environmental] technology, I will try to adopt that' (SME 6).*

*'[...] industry does cause pollution and we have been given a lot of awareness about this and we welcome every team that comes to educate us or train us' (SME 7).*

*'Look, if ever I come across anything that is new for me regarding [environmental] processes. I will make full effort to learn that [...] I am open to accept change and adapt processes [...]' (SME 8).*

The above representative evidence suggests that environmentally knowledgeable entrepreneurs were the key actors behind shaping the characteristic of flexibility and openness in these firms (Gadenne et al., 2009). They were the ones to decide if, how and which type of environmental innovations their firm would adopt (Fronzel et al., 2007). These findings confirm that environmentally competent human capital (Hamann et al., 2015; Wahga et al., 2015; Gadenne et al., 2009) served as a key microfoundation for the dynamic capability for enterprise reconfiguration in the leather industry.

It was due to their flexibility and openness to adapt to changes in their organisational field that environmentally progressive and moderate SMEs took various developmental measures such as undertaking R&D (formally or informally and in-house or collaborative), adopting cleaner technologies (indeed according to their capacity) and innovating their production processes (Sections 6.2 and 6.3). Collectively, these are the microfoundations that underpin dynamic capabilities for ecological learning and opportunity seizing in these firms (Sections 6.2 and 6.3). It implies that the three environmental capabilities as

identified did not operate as piecemeal capabilities. It is because their microfoundations were interlocked. Thus, they supported each other deployment.

#### **6.4.2 Incremental learning for organisational reconfiguration**

The pacing of experience can influence the transformation of experience into meaningful learning. While ‘experience that comes too fast can overwhelm managers’ and limit their ability to properly grasp knowledge, ‘infrequent experience can lead to forgetting what was learned previously’ (Eisenhardt and Martin, 2000, p. 1115). However, incremental learning can give them proper time to consolidate learning and develop needed routines for their firms to reconfigure effectively.

As also noted earlier (Sections 6.2 and 6.3), in environmentally progressive and moderate SMEs the environmental learning and development of assets happened in an incremental fashion. This enabled these firms to reconfigure their routines and processes for gradual but consistent environmental improvement. For example, as the respondent from SME 4, one of the environmentally progressive firms, appreciated the value of experience based incremental learning as an important microfoundation for enterprise reconfiguration.

*‘[...] slowly, slowly we have also been learning what to do [...] For everything we used to run a trial at a pilot scale and if we found that feasible we used to go ahead with that’ (SME 4).*

Similarly, owner-managers of two of the environmentally moderate firms, for instance, SME 6 and SME 16, said:

*'[...] gradual but consistent improvements are in process. We are improving day by day [...] routines keep improving regularly' (SME 6).*

*'With the passage of time we learn the right proportion of ingredients [...] There is a big role of experience [...] chemical companies have their market agents who visit us and tell about the new chemicals [...] we run a small-scale trial and check the new chemicals. Rest, it is all about the experience [...]' (SME 16).*

It was the experience based incremental learning that allowed environmentally progressive and moderate SMEs to achieve 'technical' and 'evolutionary' fitness in their dynamic capabilities for environmental improvement (Helfat et al., 2007) in that these capabilities not only enabled these firms to address their environmental issues but also improved their economic performance. For instance as the owner-manager of SME 15 said: *'If the environment is saved, we also get the money'*. Incremental learning thus served as a key factor that underpinned the enterprise reconfiguring capability. This microfoundation overlaps between the dynamic capabilities of ecological learning, opportunity seizing and enterprise reconfiguration, and therefore makes the implementation of enterprise reconfiguration capability consequential to the presence of other two capabilities (Eisenhardt and Martin, 2000).

#### **6.4.3 Environmental management system**

The framework of dynamic capabilities emphasises on developing systematic learning and knowledge management processes for successful reconfiguration of enterprises (e.g.

Eriksson, 2014; Teece, 2007). For environmental improvement, SMEs can adopt systematic learning and management processes through gaining environmental certifications such as ISO 14001 (Balzarova and Castka, 2008).

While all environmentally progressive and moderate SMEs were aware of ISO 14001, only a minority of them (SMEs 4, 7 and 8) had attained this certification. The firms that had attained the certification were of medium size and had considerable involvement in exports. Such SMEs could better appreciate the value of ISO 14001 for meeting the environmental requirements of international buyers and for reconfiguring systems and processes for consistent environmental improvement. For instance, as the respondent from SME 4, the only environmentally progressive firm that had ISO certification, said:

*'We have ISO 9000 and 14001 certifications [...] ISO 14001 is for environment [...] For example, waste monitoring is done under that, how their disposal is done, how we are dealing with the chemicals that are hazardous to health [...]' (SME 4).*

Similarly, owner-managers of SME 7 and SME 8, the only two environmentally moderate SMEs that had attained environmental certifications, narrated respectively:

*'In 2004, we got ISO 14001 certification [...] we received a lot of training [...] we are following that. We have displayed our environmental policy on the signboards and it is there to follow [...] we renew it every year [...] they visit us for about ten days, check our files and tell us about any updates' (SME 7).*

*'Yes, we are ISO certified. Both ISO 9000 and ISO 14001 [...] 14001 is about environmental management systems' (SME 8).*

Due to resource deficiency, it was hard for the majority of environmentally moderate firms to get environmental certifications. Some of these firms that attained such certification at some point could not afford to renew these. For instance, as the owner-manager of SME 10 asserted:

*'[For ISO 14001], you have to arrange audit every year. We cannot afford staff for that. For example, you require a separate storekeeper, an auditor etc. so, financially [we] cannot afford so much staff' (SME 10).*

However, by attending some trainings that were arranged by the environmental support institutes, SMEs in this category were trying to follow, though informally and partially, general guidelines of ISO 14001 for better environmental management. For example, as the owner-manager of SME 6, a small size resource deficient firm, said:

*'I started ISO 14001, but could not complete that [...] but I completely read about that [...] I have learned about that process [...] although, I do not fully follow the documented process, but, at least, something is maintained [...]' (SME 6).*

Since SMEs in both categories were well aware of the need to have systematic environmental management processes in place, those who were operating without such systems aspired to adopt these in the near future. For example, as the owner-manager of SME 15, one of the environmentally progressive firms, asserted:

*'I think, a benefit of living there [in the UK] has been that I got better exposure about my field [...] And that is a step for moving towards ISO 14000 and now we shall work on that [...] we are getting the BSC audit, Business Social Compliance, of our tannery [...] that we are not using child labour, not damaging the environment and not using any harmful chemicals in the product' (SME 15).*

On the same topic, owner-manager of one of the environmentally moderate SMEs, for example, SME 18, said:

*'Next, we will be working on ISO 9001, 9002 and ISO 14001. I think, may be in six months or within a year we will do it [...] we will go for ISO certification and we will go for effluent treatment plant. These are the two main things, we must start immediately, may be within this year. This year we must do' (SME 18).*

#### **6.4.4 Networks and enterprise reconfiguration**

One thing was common amongst environmentally progressive and moderate SMEs i.e. they had established effective environmental learning networks. Through these networks, they could learn about how to reconfigure the resources and processes for better environmental performance (Sections 6.2 and 6.3). Environmental networks were also an important source for these firms to keep themselves abreast with the new environmental standards of their markets (Section 5.3.1). As is already noted at different points in this thesis (for example, Section 6.2), amongst networked actors, intermediary organisations particularly the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) played a

prominent role in the environmental capacity building of environmentally progressive and moderate SMEs. Firms in both these categories had established strong ties with CPC and CPI. These institutes were extending them considerable support for innovating environmentally and thus keep reconfiguring. SME owners and managers had established faith in these organisations as their sincere partners helping them to move up the environmental learning curve for better environmental performance. For example, a quote from an environmentally progressive firm, SME19, which was already introduced above (Section 6.2.1(a)) to highlight the role of environmental support institutes in environmental improvement of SMEs serves to illustrate the present point:

*'[...] the Netherlands [...] gave some funding and NEC [now called CPI] was made. Their unit was established in Lahore [...] They properly do the audit and tell us about what and how different things need to be done [...]' (SME 19).*

On the same topic, owner-manager of SME 6, one of the environmentally moderate firms, for instance, also stated:

*'[...] problems are emerging. That is why CPC has been working on this and telling us that if we do not meet the [environmental] requirements, we would not be able to export [...] gradual but consistent improvements are in process. We are improving day by day [...]' (SME 6).*

Interaction with chemical suppliers also remained a key for environmentally progressive and moderate SMEs to continuously update their environmental knowledge portfolio, and reconfigure processes according to the emerging environmental trends in their markets of



operation. For example, as also illustrated earlier (Section 4.2.1(d)), one of the respondents from environmentally progressive firms, SME 4, said:

*'[...] the chemical suppliers are involved [...] they are foreigners  
[international companies], some are Germans and some are Italians  
[...] we keep receiving such information from them [...]' (SME 4).*

Similarly, the respondent from SME 20, one of the environmentally moderate firms, for instance, stated:

*'[...] whatever requirements our customers send us [...], we discuss  
those with our chemical suppliers' (SME 20).*

Since SMEs deliberately used their social capital (Nahapiet and Ghoshal, 1998; Adler and Kwon, 2002; Coleman, 1988; Blyler and Coff, 2003) to draw benefits from externally available resources for their environmental transformation, networking seemed to have remained as effective a factor underpinning the dynamic capability for enterprise reconfiguration as it was for the dynamic capabilities for ecological learning and opportunity seizing.

### **Section summary**

This section has illustrated that dynamic capability for enterprise reconfiguration enables environmentally progressive and moderate SMEs to undergo environmental transformation on consistent basis allowing them to coevolve (Lewin et al., 1999; McKelvey, 1997) with the industry and market trends. This capability thus enables these firms to sustain and improve their environmental performance in an incremental fashion. Flexibility and openness to adapt to the moderately dynamic business environment,

incremental learning and the active and purposeful use of networks serve as microfoundations that underpin the enterprise reconfiguration processes in the two categories of SMEs.

## **6.5 Chapter summary**

The objective of this chapter has been to investigate what might enable SMEs to adopt environmental practices in Pakistan's leather industry, and thus respond to the calls for undertaking such research (Halme and Korpela, 2014; Hofmann et al., 2012; Parry, 2012) because enabling factors of environmental improvement in SMEs are not much examined in the previous literature.

By and large, environmentally progressive and moderate leatherworking SMEs display having the competency of 'entrepreneurial managerial capitalism', which 'involves recognizing problems and trends, directing (and redirecting) resources, and reshaping organizational structures and systems so that they create and address technological opportunities while staying in alignment with customer needs' (Teece, 2007, p. 1346-1347). Drawing on a number of innovative interactive processes, for example through their collaborative arrangements with the intermediary organisations and input suppliers, these firms identify environmental opportunities and exploit those by deploying their individually or collectively developed environmentally relevant resources and capabilities. In the process, they reconfigure their routines and procedures which enable them to address the issues of environmental degradation while staying in alignment with the customer needs and environmental requirements of other industry stakeholders such as the formal and informal institutional forces. Three environment specific dynamic capabilities, ecological

learning, opportunity seizing and enterprise reconfiguration, enable these firms to achieve this.

While these environmental capabilities are seen to have been present in both categories of SMEs, their microfoundations display similarities as well as variations across the firms. For example, the processes of knowledge exploitation and exploration underpin the ecological learning capability. Every environmentally progressive and moderate firm adopts ecological knowledge exploitation processes, whereas knowledge exploration processes appear to remain a hallmark of relatively resource-rich, environmentally progressive SMEs. However, some of the environmentally moderate SMEs that can acquire the needed resources, for example through environmental collaborations with environmental support institutes and input suppliers, become able to search new ecological knowledge. For example, they use R&D facilities of the input suppliers and product testing labs. To elaborate further, processes of asset selection and deployment serve as microfoundations for the dynamic capability for seizing environmental opportunities. One of the aspects of these processes is the adoption of cleaner technologies. Environmentally progressive SMEs, being resource-rich, can afford to buy expensive advanced cleaner technologies such as the colour-coating machines and effluent treatment plants. In contrast, less resource-rich, environmentally moderate SMEs can only afford to have relatively cheaper technological assets such as the dust collectors and water flow meters. And some of these firms even get these cheaper assets free of cost from the environment support institutes. Nevertheless, whether these are expensive or cheaper technologies, the processes of their adoption ultimately underpin the dynamic capability for seizing environmental opportunities in environmentally progressive and moderate SMEs.

Social capital is one of the precursors to owning the identified environmental capabilities. Environmentally progressive and moderate SMEs by deploying it enter into environmental collaborations with different institutional actors, such as the cleaner production institutes and input suppliers, and learn about and diffuse environmental innovations.

In the Pakistani context, where formal institutional mechanisms for environmental support of SMEs remain less effective, the interaction of intermediary organisations, like the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), with SMEs is found to be crucial for these firms to advance their environmental capabilities. These organisations by collaborating with SMEs and industry associations have performed a 'proto-institutional' role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002), taking appreciable measures for institutionalising cleaner production in this industry sector. In fact, they have served as (informal) compensatory institutional structures (Kolk, 2014) providing the much-needed support to leatherworking SMEs for their environmental capacity building.

The proactive environmental behaviour of owner-managers and their environmental competencies also strongly underpin the presence of environmental capabilities in environmentally progressive and moderate SMEs (Hamann et al., 2015; Wahga et al., 2015; Williams and Schaefer, 2013; Gadenne et al., 2009). At the same time, some other capabilities such as the pollution prevention, product stewardship (Hart, 1995), strategic proactivity (Aragón-Correa et al., 2008) and absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) are also seen to have served as precursors to the presence of environmental capabilities in these SMEs.

Although environmentally progressive and moderate SMEs have developed dynamic capabilities for environmental improvement which enable these firms to adopt environmental practices proactively, they still face a number of challenges that limit their environmental improvement. The next chapter investigates environmental barriers in these two categories of SMEs. As a reminder, some SMEs remained environmentally distanced, and the reasons for them to have remained environmentally disengaged were discussed earlier in Chapter 4 (Section 4.2.3).

## **Chapter 7 Barriers to environmental improvement in environmentally progressive and moderate SMEs**

### **7.1 Introduction**

This chapter reports on findings about the barriers that hamper environmental improvement in environmentally progressive and moderate SMEs in the Pakistan leather industry<sup>20</sup>. An investigation of environmental barriers is important because if these are not understood and addressed then the contribution of SMEs in this economically and socially vibrant industry sector can decline to result in both economic (e.g. falling export earnings) and social (e.g. labour losing jobs) deprivations. Findings of this chapter, therefore, inform both policy and practice. While SME owner-managers can better understand environmental barriers and strategise accordingly to address these, the public policy managers and environmental support institutes can get informed for designing interventions aimed at enabling SMEs to improve their environmental performance.

The environmental barriers as identified are rendered to a binary classification. These are categorised as either ‘internal’ or ‘external’ factors that inhibit environmental improvement in environmentally progressive and moderate SMEs<sup>21</sup>. The leading internal barriers are the budgetary constraints and environmentally under-developed labour force.

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<sup>20</sup>In chapter 4 (Section 4.2.3), it was examined why some SMEs in the Pakistan leather industry remain environmentally distanced. Environmental barriers identified in that section can be regarded as ‘detering’ barriers, in contrast with the ‘revealed’ barriers that are examined in this chapter (D’ Este et al., 2012). ‘Detering’ environmental barriers discourage firms from starting to take environmental measures. Those who mention about such barriers do not build their responses on the basis of their practical experiences but largely on their perceptions and judgements. In contrast, ‘revealed’ environmental barriers evolve out of experiences that firms gain while practically adopting environmental practices (D’ Este et al., 2012).

<sup>21</sup> While some of the internal barriers as identified are similar for SMEs in both categories and some differ, the external barriers are seen to have been same.

At the external level, findings refer to the salience of contextual and institutional constellations in constraining environmental improvement in environmentally progressive and moderate SMEs. Thus external barriers relate to the institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) including limited support from national government and complexity and weaker enforcement of environmental regulations, in addition to the underdeveloped infrastructure and higher tolerance level of local communities for environmental degradation. However, compared to these barriers, internal ones appear to be more 'effective' (Murillo-Luna et al., 2011) in hampering environmental improvement in environmentally progressive and moderate SMEs.

In contrast with the previous literature which argues that informational barriers can limit environmental improvement in SMEs (e.g. Walker et al., 2008; Revell and Blackburn, 2007; Pimenova and van der Vorst, 2004), environmentally progressive and moderate SMEs in the Pakistan leather industry do not face this challenge. It is because intermediary organisations, such as the Cleaner Production Centre (CPC), Cleaner Production Institute (CPI), Pakistan Tanners Association (PTA) and Pakistan Gloves Manufacturers and Exporters Association (PGMEA), have been helping these firms in accessing the latest environmental information from the local and international sources, and that too at no cost (Section 6.2). However, there can be considerable implications for SMEs pursuing this information seeking strategy in the long run. For example, if at some point intermediary organisations stop providing their services or fail to deliver with the same level of service that would hamper environmental improvement of leatherworking SME considerably. These firm thus need to develop self-sustaining mechanisms for seeking ecological information.

Findings suggest that if leatherworking SMEs, more specifically environmentally moderate firms, manage to address internal hindrances then chances of their environmental performance being hampered by external barriers may decrease. For example, if they have enough resources they can extend their physical area to install new cleaner technologies, train their labour force and buy expensive eco-friendly inputs.

Generally, findings of this study about environmental barriers are not surprisingly new to the literature. However, the knowledge about contextual factors that underpin these barriers can give a good idea to environmental interventionists seeking to extend support to leatherworking SMEs for enabling them to achieve their environmental objectives.

The remainder of this chapter has three sections. Section 7.2 examines internal barriers to environmental improvement in environmentally progressive and moderate SMEs. Findings about external environmental barriers in these firms are presented in Section 7.3. The chapter concludes with a summary in Section 7.4.

## **7.2 Internal environmental barriers**

Compared to environmentally progressive SMEs, environmentally moderate firms offered more insights about internal environmental barriers, possibly because firms in the latter category were still struggling to overcome these barriers and some of the SMEs in former category had addressed such barriers to an extent. For example, the owner-manager of SME 15, one of the environmentally progressive firms, described how they managed to raise finances needed for buying advanced cleaner technologies:

*'[...] when we were to install the new machine of roller-coating, its cost was Rs. 70,000,000. My brother had a land cruiser. I said, sell*

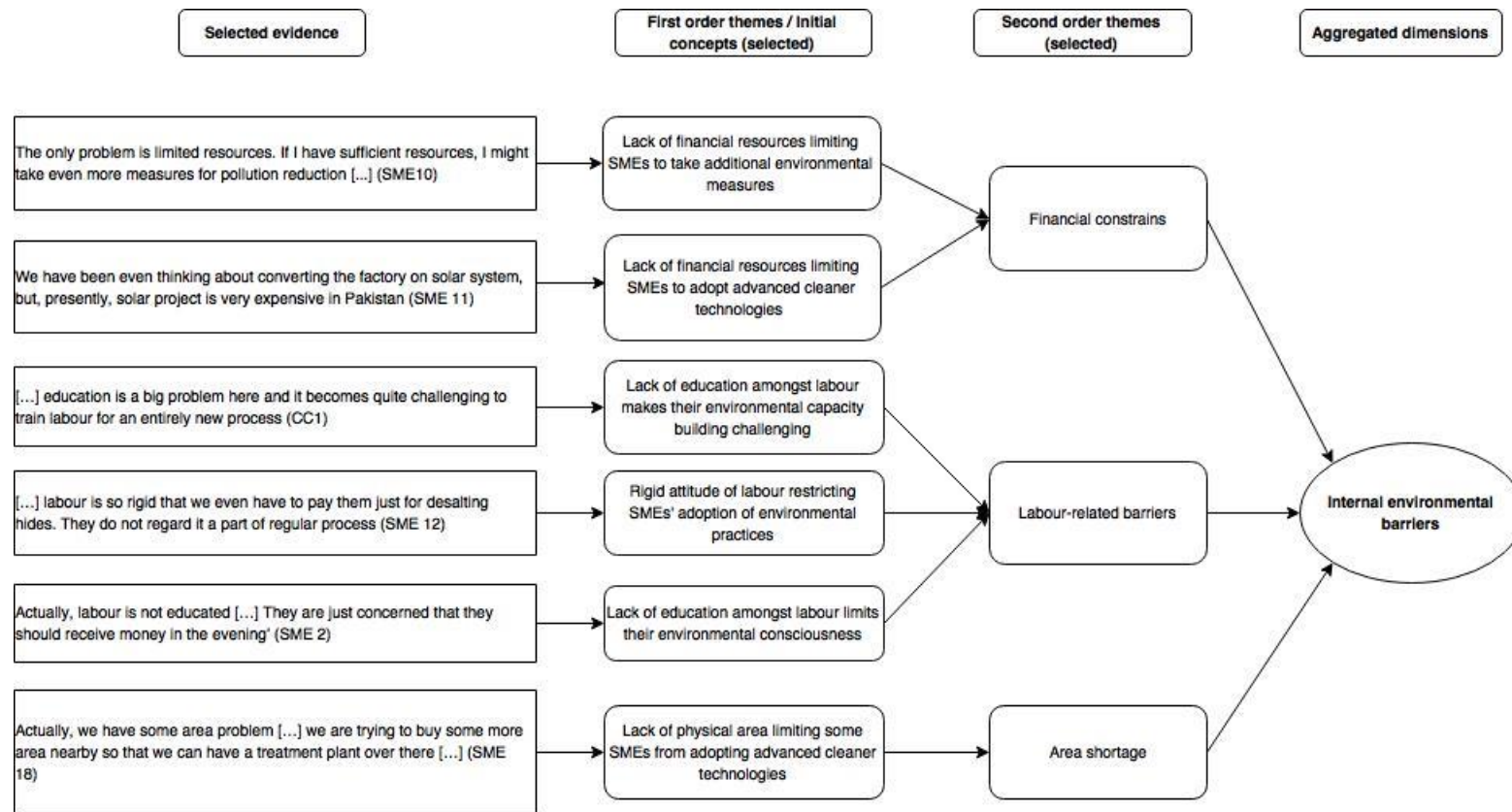


*the land cruiser you will be able to buy it back because it [roller-coating machine] will save the resources by 20 to 30 percent and, considering the volume of our business, we will receive the amount of car back. With the grace of Allah, now he has the same two cars and the machine is also there [...] Thus a lot of chemical is saved. If the environment is saved, we also get the money' (SME 15).*

Nevertheless, not every environmentally progressive firm was able to address all the internal barriers to environmental improvement. The leading internal environmental barriers in both categories of SMEs were related to the financial constraints and human resource issues (mainly labour-force). Some of the environmentally moderate SMEs also regarded shortage of physical space as a barrier to their environmental improvement. Each barrier had distinctive effects. For example, human-resource related barriers were perceived to have been hampering the environmental capability development processes in these firms. And financial constraints were seen as a major hurdle in buying advanced cleaner technologies for becoming eco-efficient.

Figure 7.1 displays 'data structure' related to the identification of internal environmental barriers (Gioia et al., 2013). Next three subsections (7.2.1, 7.2.2 and 7.2.3) report that the financial constraints, labour-related issues and a shortage of physical space limit environmental improvement in environmentally progressive and moderate SMEs.

**Figure 7.1: Data structure for internal environmental barriers**



Source: Developed by the researcher.

### 7.2.1 Financial constraints

Owner-managers of environmentally progressive and moderate SMEs were much interested in taking more environmental measures, but budgetary constraints were not allowing them to materialise all of their aspirations. These constraints were however much more strongly mentioned by the respondents from environmentally moderate firms. Possibly because, compared to their environmentally progressive counterparts, firms in this category had smaller volumes of sales and thus lesser surplus budgets to make environmental investments. For example, as owner-managers of three of the environmentally moderate firms, SME 10, SME 11 and SME 17 stated respectively:

*'The only problem is limited resources. If I have sufficient resources, I might take even more measures for pollution reduction [...]' (SME10).*

*'[...] being a part of cottage industry, whatever we could do with the available resources, we have done a lot. We wish to do more [...] We have been even thinking about converting the factory on solar system, but, presently, solar project is very expensive in Pakistan due to which we cannot do that [...] [Wastewater treatment plant] is not affordable [...] The worth of our business is even lesser than the price of a plant. So, it is not possible to install a plant [...]' (SME 11).*

*'[...] we are a middle standard tannery [...] the cost that it [wastewater treatment plant] requires is too high. It is mainly the cost issue' (SME 17).*

Two of the environmentally progressive SMEs also regarded financial constraints as a limiting factor. For example, the owner-manager of SME 13, one of the environmentally progressive firms, asserted that a major hurdle for them to buy the solar system in order to become more eco-efficient was limited financial resources:

*'Many people are talking about solar, but that is very expensive [...]' (SME 13).*

However, in some areas, SMEs took collaborative measures to overcome financial barriers to their environmental improvement through cluster level environmental innovations. For example, in Kasur and Karachi clusters, by sharing their limited financial resources and attracting the financial and technical support from some other stakeholders, such as UNIDO and district government, they set up combined effluent treatment plants. Such cluster based environmental initiatives were not possible in regions like Sialkot, Muridkey and Sheikhupura where SMEs were sparsely situated. Nevertheless, there were hopes that in the near future SMEs in Sialkot region would also have such facilities as the development of Sialkot Tannery Zone was in progress where a combined effluent treatment plant was to be set up (Section 1.5). Realising the economic and environmental benefits attached to this project, environmentally proactive SMEs in that region had made financial contributions to its development. These findings suggest that in a developing economy like Pakistan where formal institutional support from the government departments remains limited, SMEs can

collaborate to overcome their internal environmental barriers through cluster level environmental innovations.

Findings also revealed that because of having limited financial resources many SMEs, more specifically the environmentally moderate firms, could not hire trained staff for looking after their environmental management affairs (Hillary, 2004). This constrained them from attaining environmental certifications such as ISO 14001. For instance, as the owner-manager of SME 10, one of the environmentally moderate firms, said:

*'[For ISO 14001], you have to arrange audit every year. We cannot afford staff for that. For example, you require a separate storekeeper, an auditor etc. so, financially [we] cannot afford so much staff' (SME 10).*

Possibly, SMEs can overcome barriers to attaining environmental certifications through environmental collaborations, as they did in certain areas for having combined effluent treatment plants. For example, by pooling their limited financial resources, multiple firms can hire a common consultant to look after their affairs regarding environmental certifications.

### **7.2.2 Labour-related barriers**

Employees play an important role in enabling firms to execute their operations. Their active participation in operationalising pollution prevention measures is therefore necessary for SMEs to reduce their environmental footprints (Hart, 1995). Generally, employees (mainly the labour-force and leather technicians) in Pakistan's leather industry had a passive approach towards tackling environmental problems. Due to this, environmentally

progressive and moderate SMEs were finding it difficult to use their human resources for environmental improvement effectively. Consistent with some prior studies, the main reasons for environmentally passive behaviour of employees were related to their rigid approach towards adopting environmental innovations, lack of education and absent/limited 'eco-literacy' skills (Ortolano et al., 2014; Murillo-Luna et al., 2011; Walker et al., 2008; del Brío and Junquera, 2003; Tilley, 2000). They were, therefore, less open and flexible to undertake experiments for environmental improvement. For example, as a respondent from SME 4, one of the environmentally progressive firms, said:

*'[...] at times, when a new process is adopted, that appears difficult because you leave a routine for a change. Due to this, some tension remains there between the R&D department and those who look after the processes' (SME 4).*

Similarly, respondents from SME 2 and SME 5, two of the environmentally moderate firms, asserted respectively:

*'Actually, labour is not educated [...] They are just concerned that they should receive money in the evening' (SME 2).*

*'[...] hesitation [to adopt a new process] might come from the drumming team or from those operating the vacuum machine. As vacuum is a hot plate related work, they hesitate by saying that material is stiff or is not getting fixed properly' (SME 5).*

Respondents from environmental support institutes, the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), also shared similar experiences. For example, the programme manager of CPI narrated:

*‘Particularly, they [labour] resist when we tell them to change some process, which they have been following for many years [...] it is mainly because they are uneducated. So, if we tell them something, which is new for them, they do resist [...]’ (Programme manager, CPI).*

Even a chemical company’s representative, who had been training labour-force in different tanneries about using environmentally less harmful chemicals, also said:

*‘[...] education is a big problem here and it becomes quite challenging to train labour for an entirely new process’ (CC1).*

The above representative evidence from multiple sources suggest that the labour-force of tanneries in Pakistan was trapped in skills lock-in (Montalvo, 2008; Rathi, 2003), which constrained them from unlearning old tanning processes and acquire new skills of leather manufacturing. They, hence, preferred to operate in their comfort zones by repeating the already learned techniques of leather processing.

The continued lack of cooperation from labour-force could hamper the environmental engagement and competitiveness of environmentally progressive and moderate SMEs. The owners and managers of these firms were taking some measures to overcome this environmental barrier. Some of them had started to incentivise labour for observing cleaner production processes. For example, as the owner-manager of SME 12, one of the

environmentally moderate firms, said that they were paying additional money to workers for desalting hides:

*'[...] labour is so rigid that we even have to pay them just for desalting hides. They do not regard it a part of regular process' (SME 12).*

Some of the owners and managers were using a mixed approach for dealing with such a challenging attitude of their employees. They were, for example, educating them about eco-friendly production processes, and if not listened well they considered using coercive means to mend their behaviour. For instance, as the respondents from SME 20 (an environmentally moderate firm) and SME 15 (an environmentally progressive firm) said respectively:

*'[...] we tell them [about environmentally responsible processes], educate them and at times we have to be strict with them. At times, we have to give them warnings even' (SME 20).*

*'[...] I faced much resistance from staff, particularly from the old technicians [...] At times, they did not let the process run, as I had directed [...] just for insulting me and making statements such as studying from abroad is worthless and these are all bookish things. So, this internal enmity has been a great challenge for me for about 4 to 5 years. However, gradually, as we were the owners, I started to fire people who were most disturbing [...]' (SME 15).*



Owner-managers of environmentally progressive and moderate SMEs had the realisation that for proactively adopting environmental practices they would have to educate and train their workers. They, therefore, took measures for on the job environmental training of employees. For example, as also illustrated earlier (Section 4.2.2(c)), the owner-manager of SME 9, one of the environmentally moderate firms, said:

*‘We train our employees according to the European standards and customer requirements [...] Whatever the CPC and the Environment department tell, our foreman gives the awareness about that to our employees and labour. As some of the labour is not educated, we have put up sign posts [posters] to show them that how they are expected to work [...] We keep educating our employees that when they are not working no extra lights should be left switched on’ (SME 9).*

The above evidence also suggests that environmental support institutes, like the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), also provided useful support and services to SMEs for the environmental training of their employees. This was confirmed by the representatives of these institutes, as the following evidence shows:

*‘We therefore even trained the labour while visiting tanneries [...] The training of labour is also very important. It is also very important for the owner to be progressive (Programme manager, CPI).*

*‘[...] we developed large size posters and showed those to the workers and asked them to read those carefully. We told them what care they should ensure according to signs’ (Project manager, CPC).*

Nevertheless, maximum benefits from such trainings were hard to achieve because of the high turnover of workers. It was a common practice in Pakistan's leather industry to hire contractual labour. Some of them were even seasonal workers. SME owner-managers were therefore sceptical about spending money on the environmental education and training of such workers who might quit the job at any time or would not turn up in the following season. For instance, as the owner-manager of SME 12, one of the environmentally moderate SMEs, said:

*'Then there used to be lectures for the management and employees.*

*But as I have told you about the turnover of employees, benefit of all this is lost' (SME 12).*

These findings suggest that, in addition to educating and training labour, there is a need to promote the culture of permanent employment in Pakistan's leather industry. This can help SME owner-managers to retain their staff and also encourage them to invest in the environmental capacity building of their human resources. Otherwise, the fear of investment being drained out due to the higher churning and displacement of labourers might keep hampering environmental improvement in SMEs.

### **7.2.3 Shortage of physical space**

There was only a minority of environmentally moderate SMEs that mentioned about the shortage of physical space as a barrier to their environmental improvement. Particularly, these were the firms that had grown in the last few years and were eager to improve their environmental performance alongside economic achievements. Due to limited physical space, it was not possible for them to develop infrastructure. They could not construct

lagoons to settle down sludge, set up wastewater treatment and recycling plants, fit energy efficient boilers and shift generators to a distanced place to address noise pollution. For instance, as the owner-managers of two of the environmentally moderate firms, SME 5 and SME 18, that were facing this barrier, said respectively:

*'There is another thing that we have planned and decided to do, but due to the shortage of space we have not been able to do that yet. We are keen to reuse water that is wasted' (SME 5).*

*'Actually, we have some area problem [...] we are trying to buy some more area nearby so that we can have a treatment plant over there [...] we need a boiler but, as I have told you earlier, we have shortage of space. We cannot put any boiler here [...] For ISO certification, you will have to make a lot of changes [...] We cannot do that at the moment because of shortage of space [...] generators are fixed in the middle of the area, nearby offices, whereas those should be far away [...]' (SME 18).*

These challenges of environmentally moderate SMEs are not much different from what has been observed in some other Asian countries including China, India, Sri Lanka, the Philippines and Vietnam, where due to the shortage of space SMEs have been struggling to install new equipment or modify the existing technologies for reducing their environmental footprints (Thiruchelvam et al., 2003, p. 980).

## **Section summary**

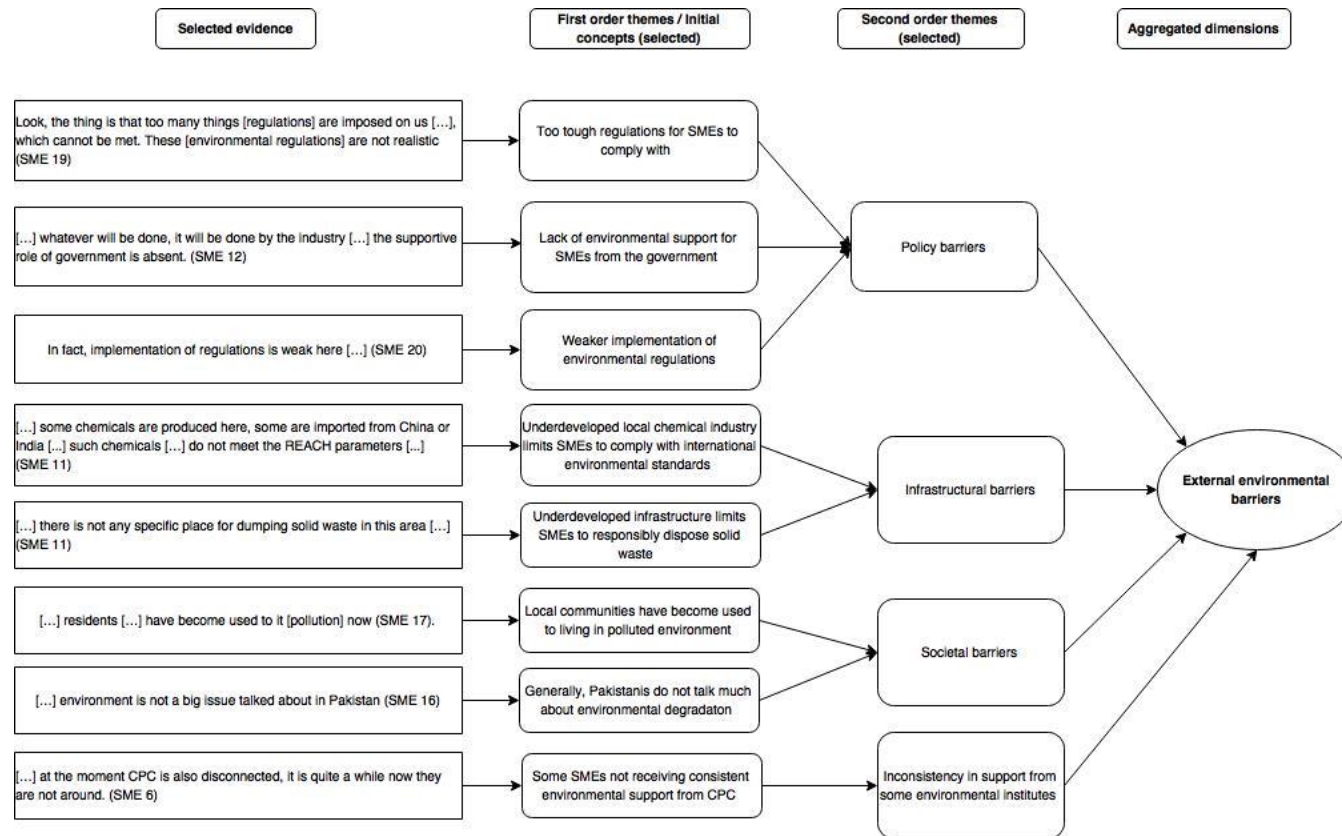
This section has examined internal environmental barriers in environmentally progressive and moderate SMEs. Compared to firms in the former category, these barriers were more strongly highlighted by firms in the latter category. While SMEs in both categories face financial and labour-related barriers, some of the environmentally moderate firms face an additional barrier i.e. shortage of physical space. While the majority of environmentally progressive has been able to manage somehow sufficient financial resources needed for their environmental improvement, few of these are constrained by a dearth of these resources from buying advanced cleaner technologies such as the solar heating systems. On the other hand, budgetary constraints limit environmentally moderate SMEs from not only buying expensive advanced cleaner technologies and formalising their environmental management systems by having environmental certifications such as ISO 14001 but also do not permit these firms to buy physical space for housing cleaner technologies such as the water treatment plants and energy efficient boilers. The labour-force related barriers, such as lack of 'eco-literacy' skills (Tilley, 2000), constrain firms in both categories from effectively implementing environmental innovations. Given the ever increasing environmental pressures for leatherworking firms, it can be challenging for them to sustain their economic and environmental performance and competitiveness (Parry, 2012; Simpson et al., 2004) in the long run unless they create or manage to develop the environmental resources needed to overcome these internal barriers.

### **7.3 External environmental barriers**

External environmental barriers that environmentally progressive and moderate SMEs faced were related to the policy barriers, infrastructural barriers, societal barriers and

inconsistent support from some intermediary organisations. To a larger extent, these environmental barriers were seen to be common for SMEs in both categories. The 'data structure' in Figure 7.2 displays the processes underpinning the identification of these barriers (Gioia et al., 2013). Four subsections below (7.3.1, 7.3.2, 7.3.3 and 7.3.4) present findings about external environmental barriers as identified.

**Figure 7.2: Data structure for external environmental barriers**



Source: Developed by the researcher.

### 7.3.1 Policy barriers

Policy related environmental barriers comprised the limited support from national government, tougher environmental regulations and their weaker enforcement. These barriers collectively referred to the pervasiveness of institutional ‘gaps’ (Littlewood and Holt, 2015b; Kolk, 2014) in Pakistan’s economy in that the formal institutions, such as the Ministry of Environment, Ministry of Industries and Production, Ministry of Commerce, were there but they were not performing their functions as efficiently as required. This hampered environmental improvement in leatherworking SMEs.

Talking about the inherent complexity of environmental regulations in the country, owner-manager of SME 19, one of the environmentally progressive firms, for example, asserted that these regulations were not realistically made and were therefore too difficult for firms to comply with:

*‘Look, the thing is that too many things [regulations] are imposed on us [...], which cannot be met. These [environmental regulations] are not realistic’ (SME 19).*

On the same topic, owner-manager of SME 12, one of the environmentally moderate firms, said:

*‘[...] unfortunate thing is that the standards they [national government] require that might not be possible to achieve in Pakistan [...]’ (SME 12).*

Other industry stakeholders also observed the ever increasing complexity in environmental regulations. For example, a representative of SGS, a product testing laboratory, stated that:

*‘The major challenge that the industry is facing at the moment is that the regulatory requirements are increasing day by day’ (SGS).*

These findings are consistent with some of the previous studies (e.g. Wilson et al., 2012; Mir, 2008; del Brío and Junquera, 2003) that have identified the complexity of environmental regulations as one of the barriers to environmental improvement in SMEs.

Although Pakistan’s government had introduced tougher environmental regulations to mend environmentally less responsible behaviour of firms, a considerable policy failure was identified in the form of their weaker enforcement. Respondents from both categories of SMEs believed that because of this some of their peers were able to carry on with their environmentally harmful production practices easily. Weaker enforcement of regulations, in fact, allowed some leatherworking firms to adopt a ‘defying’ and/or ‘avoiding’ strategy (Oliver, 1991) and ignore compliance (Section 4.2.3). Due to this, environmentally progressive and moderate SMEs were facing competitive disadvantage which to some extent was discouraging their owners and managers to pay considerable attention to environmental improvement. For example, as respondents from two of the environmentally moderate firms, SME 2 and SME 20, stated respectively:

*‘[...] government should take a serious stand on this, but they do not [...]’ (SME 2).*



*'In fact, implementation of regulations is weak here [...] environmental protection agency is there but no one follows them (SME 20).*

A major reason for the weaker enforcement of regulations was seen as environmental inspectors not performing their duties diligently. They were not inspecting leatherworking firms regularly and were also bribed by owners and managers of some environmentally non-compliant SMEs, a similar situation to the one observed by Studer et al., (2005) in another Asian country, India. For example, as two respondents said:

*'You know this problem mainly exists because of the negligence of government agencies. Everything can be cleared, but if the environment department wants to do that [...] the problem is that unfair means are used to settle the issues' (SME 5).*

*'No one is around to keep a check on us [...]' (SME 11).*

These findings suggest that the presence of weaker coercive institutional forces (DiMaggio and Powell, 1983), mainly from the government departments, is a considerable hurdle in achieving 'field cohesion' (Bansal and Roth, 2000) in Pakistan's leather industry. Contrary to some earlier studies which regard regulation as an effective force pushing SMEs to behave environmentally responsibly (e.g. Revell et al., 2010; Studer et al., 2006), it appears to serve as a barrier to environmental improvement in the case of Pakistan's leather industry because SMEs in this industry sector do not find themselves operating in a level playing field.

Owners and managers of environmentally progressive and moderate firms showed considerable discontentment regarding the support from the national government for addressing environmental issues. Respondents from the two categories were adamant that due to insufficient environmental support from formal institutional set ups, they had to be proactive for addressing their environmental problems.

*'[...] whatever we need to do, we have to do that on our own.*

*There is no support from the government [...]' (SME 11).*

*'[...] whatever will be done, it will be done by the industry [...] the supportive role of government is absent.'* (SME 12).

And in this regard, they appreciated the support coming from their industry associations.

*'Our leather association is making considerable efforts in this regard, but the association needs support from government' (SME 5).*

*'They [government departments] should be active and visit different tanneries and occasionally they should arrange seminars and invite us. They should invite us to share knowledge about pollution and environment. They should do such activities frequently' (SME 17).*

Findings also revealed that some international organisations also supported these firms in their environmental capacity building (Chapter 4, Chapter 5 and Chapter 6). However, the international sponsors had stopped extending financial and technical environmental assistance to Pakistan's leather industry through government departments because of their poor managerial capacity. They were rather happy to intervene through the established

private sector institutes, and industrial associations, which they found were more active and disciplined compared to lesser efficient government departments. For example, as a programme manager from Cleaner Production Institute (CPI) narrated:

*‘Actually, what happened was that initially the Dutch or the Norwegian government had the policy that they would provide funding through government [...] when they observed that government was not much responsible, they were not making progress or had limited interest, they changed their policy. They said we would not come through government, rather we would come through institutes [...] policy changed and they mostly started to operate through the association. For example, we have executed most of the projects of the Dutch through Cleaner Production Institute and through the industrial association, which is Pakistan Tanners Association, North Zone and South Zone [...] Now it is their policy, they are not happy with government because they think that government is least interested [...] They hardly come through government’ (Programme manager, CPI).*

In summary, findings about policy related barriers refer to stringent institutional ‘gaps’ (Littlewood and Holt, 2015b; Kolk, 2014) in Pakistan’s economy which hinder government departments to extend support to environmentally progressive and moderate SMEs for improving their environmental performance. In the long run, such a situation can discourage these firms from proactively adopting environmental practices. Thus, there is a

pressing need that Pakistan's government take steps to overcome pervasive institutional gaps.

### **7.3.2 Infrastructural barriers**

Underdeveloped infrastructure can hamper environmental improvement in SMEs (e.g. Allet, 2015; Revell et al., 2010; Vernon et al., 2003). This was also true for leatherworking SMEs in Pakistan. During the field visits, the researcher observed that drainage system was in wretched condition across tannery clusters in both Punjab and Sindh provinces. Its maintenance and development was not only a responsibility of district governments, equally liable were the management of combined effluent treatment plants. However, during the last few years, these institutions had become less efficient in delivering their services because of having limited access to resources. For instance, as two respondents from environmentally moderate firms, SME 2 and SME 20, said respectively:

*'[...] if the weather turns bad [...] the road outside gets flooded. It becomes difficult to walk here. I mean this area gets filled with water coming from different tanneries. The area becomes muddy with lots of mosquitos around. It is a big problem; it is a very big problem here' (SME 2).*

*'I do not think at the moment much working is done on this [...] drains, which they have built separately for those tanneries doing beam house processes, are broken. No working is going on now. There is another plant in Kasur, you can consider that it has become similar to that' (SME 20).*

The absence of proper dumping sites for solid waste was also limiting SMEs from reducing their environmental footprints because they were struggling to dispose of their solid waste responsibly. For instance, as owner-manager of one of the environmentally moderate firms asserted: *'[...] there is not any specific place for dumping solid waste in this area [...]' (SME 11).*

In addition, due to a limited number of internationally accredited product testing labs in the country, environmentally progressive and moderate SMEs had to send samples of finished leather and leather products to internationally recognised labs in other countries. These labs were charging them a lot of money. Although a few international labs, such as SGS, had sub-branches in Pakistan, they could not provide all the required testing facilities. For sensitive tests, they had to collect samples and courier those to their main centres, such as in Taiwan, Hong Kong, UK and Germany. Respondents asserted that if internationally accredited labs were established in the country, then they could get their products tested more frequently. This, in turn, would enable them to produce environmentally less harmful products, and qualify as environmentally responsible suppliers in international markets. For example, as the owner-manager of SME 13, one of the environmentally progressive firms, said:

*'A main deficiency here is that we do not have any good lab in Pakistan [...] we have to send our leather to Taiwan or Hong Kong for testing' (SME 13).*

Similarly, the owner-manager of SME 17, one of the environmentally moderate firms, held that:

*'[...] standards [of local labs] are not comparable at the international level [...] international customers recommend international labs such as in the UK or in Germany' (SME 17).*

The underdeveloped local chemical industry was another factor limiting environmental improvement in some leatherworking SMEs. However, mainly these were the environmentally moderate firms who, due to financial constraints, were finding it hard to buy expensive imported chemicals. By using locally produced chemicals, these firms could not comply with REACH standards which was a basic requirement of international customers. This was also constraining them from establishing responsible supply chains (Huang et al., 2012; Gold et al., 2010), and thus hampering the development of their product stewardship capability (Hart, 1995). To comply with international environmental standards, SMEs had to buy imported chemicals. This was increasing transaction costs and also limiting them from achieving their eco-efficiency targets (van Berkel, 2007). For instance, as two of the respondents from environmentally moderate firms stated:

*'[...] we use those [imported chemicals]. But those [chemical companies] that operate locally, there are many problems attached to them [...] do not meet the REACH standards' (SME 2).*

*'[...] some chemicals are produced here, some are imported from China or India or from some other countries, and the problems are there [...] such chemicals [...] do not meet the REACH parameters. This is something which the government will have to control' (SME 11).*

Lack of access to utilities such as gas and power was another challenge for environmentally progressive and moderate SMEs. For example, because of having limited or in some cases no access to natural gas, which was a less polluting and cheaper input, they had to use LPG or power to run boilers and steamers. Both these inputs were expensive and were hampering eco-efficiency of SMEs. At the same time, SMEs did not have access to the uninterrupted supply of power. Due to this, they had to use electricity generators. These generators, on one hand, were cost ineffective, and, on the other hand, a source of both air and noise pollution. Their use was, therefore, restricting SMEs in both categories from displaying sustainable behaviour. For example, as the owner-manager of SME 15, one of the environmentally progressive SMEs, said:

*'[...] we cannot avoid running generator because of power shortage.*

*Though we do not want to run it, but it is unavoidable' (SME 15).*

Similarly, two of the owner-managers of environmentally moderate firms, SME 14 and SME 16, for instance, asserted respectively:

*'If we are provided gas, many problems can be solved. I set up this factory in 1996, but until today we do not have gas in this area [...]' (SME 14).*

*'To be honest, it is really hard to conserve power. I do not think we can save energy because we have power supply for 12 hours, and then it is not available for the remaining 12 hours. Even if we have to plan production, we do not have any idea for how long power will be available tomorrow' (SME 16).*

These findings refer to the incompetency of national government that has not been able to provide basic infrastructural facilities to leather industry. Above that, strict environmental regulations are imposed on firms. It is surprising, how the national government can expect leatherworking SMEs to behave environmentally responsibly when they are not even provided basic facilities to run their operations. Nevertheless, despite the presence of all these challenges, it is appreciable that environmentally progressive and moderate SMEs are doing a commendable job to protect the wider natural environment.

### **7.3.3 Societal barriers**

Societal barriers, such as limited concerns of local communities towards environmental degradation and lack of demand for environmentally responsible products from local customers, were also amongst the factors constraining leatherworking SMEs from considerable environmental improvement (Mittal and Sangwan, 2014; Massoud et al., 2010; Studer et al., 2006). Owners and managers of SMEs, more specifically of environmentally moderate firms, asserted that they could have done more for environmental improvement if their customers and local communities had exerted considerable pressure on them. While such firms were exporting their products, they were only selling to environmentally less sensitive buyers. For example, as two respondents from export-oriented, environmentally moderate SMEs stated:

*'[...] we are doing business with those customers who are not much sensitive about the environment. They do not ask too much about environment [...]' (SME 17).*



*'Customers are mainly concerned with lab testing, they hardly ask where and how the float of leather [which we] processed for them was discharged and how many birds and human got affected by that' (SME 20).*

Local communities were seen to have become used to the polluted environment. Moreover, being less aware of its implications they were not pressurising tanneries to minimise the indiscriminate discharge of wastes. Leatherworking SMEs were thus facing limited social accountability of their polluting activities (e.g. Shen et al., 2015; Zhang et al., 2009), as the following evidence from multiple environmentally moderate SMEs show.

*'No one is interested in it. Even local people do not take interest. They say it is OK' (SME 2), '[...] fact is that these people do not have much awareness' (SME 10) '[...] no one has said anything about this until today. No one troubles us here. Anyhow business is running and it is running for many years now [...]' (SME 11) '[...] residents [...] have become used to it [pollution] now. It is going traditionally and therefore people have become used to it' (SME 17).*

This situation was more prevalent in and around those tannery clusters where employees had their residences nearby their work places, such as in Kasur and Sialkot cities. Being reliant on tanneries for earning their livelihoods and due to the fear of losing jobs, often employees were not pushing firms to operate environmentally responsibly. For instance, as one of the environmentally moderate firms, SME 16, from Sialkot region said:

*'[...] many households are linked with manufacturing activity of a tannery. Therefore, people do not exert pressure to the extent that*

*business is shut down. If a business is running and is shut down, it is not only us who will face loss; everyone will have to face the results. So, people do not raise concerns, at least they do not raise concerns seriously [...]’ (SME 16).*

Other reasons for the community to have remained less sensitive towards environmental degradation were related to the limited interest of general public in environmental issues because of them lacking environmental education and orientation.

*‘[...] environment is not a big issue talked about in Pakistan. Pakistan is still in the developing stage, we have rather made adverse progress, so it is not an extreme issue’ (SME 16).*

*‘Look, in our country environmental consciousness is absent because we have never considered environment as our priority. People are not educated about it’ (Project manager, CPC).*

These findings suggest that there is a need to mobilise local communities to play an active role in promoting environmentally responsible businesses in the country. Educating people about the implications of pollution can be the first step. It requires the active participation of government departments. They can disseminate environmental information across masses in the country, may be through media campaigns and asking educational institutes to introduce environmental sustainability as an interdisciplinary subject.

#### **7.3.4 Inconsistent support from some intermediary organisations**

With the help of international sponsors, Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) extended valuable environmental support to leatherworking

SMEs (for example, Chapter 6). However, due to the project funding coming to an end, CPC was now struggling to deliver its services with the same propensity (Ortolano et al., 2014). As a result, SMEs mainly in Sialkot region appeared to have lost an active avenue for discussing their environmental problems and seeking advice and training for adopting cleaner production processes. This loss was seen more strongly in environmentally moderate SMEs that did not have sufficient resources to access information that CPC had been providing them as free after collecting from other sources. For example, as the owner-managers of two of the environmentally moderate SMEs from Sialkot region asserted respectively:

*'[...] at the moment CPC is also disconnected, it is quite a while now they are not around. They used to do it with the support from the Norwegian government, and they are not connected with them now. The government of Pakistan is not helping them. There are no more training systems [...] I think, if they had served on continuous basis there could have been much more improvement and issues could have been solved in a much better way' (SME 6).*

*'They [CPC] used to do this, but I think now their project has come to an end and they do not provide this service anymore' (SME 7).*

The project manager from CPC also mentioned about the limited support from national government to ensure sustainability of the centre, while also highlighting its implications for environmental improvement in leatherworking SMEs.

*'This project was signed in 1998, and in 1999-2000 it was practically implemented. The project remained with us until 2003, but it had so*

*much encouraging results that it was extended up to 2006. We carried on with its implementation until 2006, but then the aid stopped [...] I tried to drag the project up to 2009. As I have good contacts in ministries, I somehow managed to have partial funding from there [...] This is a dark side. This is a hugely problematic area in this country that we get huge investments [...] this is just one small example and it was a minimal investment. Due to the absence of follow-ups, huge investments in the country go to waste. No investments become sustainable here [...] I used to have six leather technologists. They were always in the field. At times, we were busy in doing cluster meetings. So, when the follow up stopped, things started to go into the back of their [SME owner-managers and workers] minds and when things go back to the mind it becomes harder to implement those' (Project manager, CPC).*

Normative isomorphic pressure (DiMaggio and Powell, 1983) generated through the interventions from CPC that were driving SMEs for environmental improvement (Section 5.3.3), their intensity also appeared to fade away with the passage of time as the centre found it difficult to extend continuous support to firms due to lack of assistance from national government. These findings suggest that there is a considerable need to ensure sustainability of positive environmental interventions in the country. Possibly, this could be achieved with the active participation of local stakeholders of the leather industry such as the industry associations, and provincial and national governments.

Fortunately, the worst was not keeping its momentum. Recently, a positive step was taken in Sialkot region to minimise environmental impacts of tanneries. The regional tannery association and Sialkot Chamber of Commerce were successful in seeking some support from district government for the development of Sialkot Tannery Zone (STZ) in the form of acquiring land at a cheaper rate. The project manager of CPC, who was now involved in the development of STZ, explained that they had been successful in attracting some funding from Global Environmental Facility (GEF) as well.

*'[...] we aim to complete this project by 2018 [...] this new initiative (STZ) is [...] a baby of CPC. However, this new project is quite huge [...] Using my links I hooked UNIDO in this project [...] UNIDO is a technical agency it is not a funding agency, they attract funding from different agencies. So, we started to submit the project to different donors. We have been successful in getting an approval of 3.7 million dollars from GEF- the Global Environmental Facility' (Project manager, STZ).*

There was hope that in the near future tanneries in Sialkot region would get a new place to shift in the form of tannery cluster with the shared facility of the effluent treatment plant. They might also start receiving the similar environmental support for adopting cleaner production as they had been receiving in the past from CPC. For the future research, it can be another cluster level environmental innovation to examine which would be an outcome of collaboration between the micro (firms), meso (industry associations) and macro (national government and international donors and technical advisories) level factors in Pakistan.

## **Section Summary**

This section has examined external environmental barriers faced by environmentally progressive and moderate SMEs. These environmental barriers were commonly faced by SMEs in both categories because they were operating in the same organisational field. The barriers relate to policy constraints and infrastructural barriers, which are largely caused by the institutional 'gaps' (Littlewood and Holt, 2015b, Kolk 2014) in the country not allowing the formal institutional structures to extend the support needed by the leatherworking SMEs for their environmental improvement. Some societal barriers such as the environmentally less sensitive communities also limit environmental improvement of SMEs in both categories to an extent. In certain parts of the country, such as in Sialkot region, declining support from intermediary organisations due to their funding drained out is also seen as a limiting factor for environmental improvement of SMEs.

## **7.4 Chapter summary**

This chapter has investigated the environmental barriers that environmentally progressive and moderate SMEs face in Pakistan's leather industry. At the internal level, these barriers relate to limited financial resources, environmentally incompetent labour-force and a shortage of physical space. Shortage of financial resources and physical space limit SMEs from taking environmental initiatives such as adopting cleaner technologies and formalising their environmental management systems. Environmentally passive and uneducated labour-force hinder these firms from effectively implementing environmental innovations. Major external barriers relate to institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014), which relate to the limited support from national government, complex environmental regulations and their weaker enforcement. Underdeveloped infrastructure

also results in limited access for environmentally progressive and moderate SMEs to better product testing facilities and eco-friendly inputs locally. In some areas, such as Sialkot, declining support of environmental support institutes has also been observed as a barrier limiting SMEs' access to environmental information and advisory services for adopting latest cleaner production processes. Finally, environmentally progressive and moderate SMEs also face limited social accountability which limits their environmental improvement to an extent.

Some environmental barriers faced by environmentally progressive and moderate SMEs, such as financial, policy and societal barriers, appear similar to those found earlier in the case of environmentally distanced SMEs (Section 4.2.3). However, their effectiveness differs for each group of firms. In this regard, findings appear to lend support to 'revealed' and 'deterrent' barrier hypotheses (e.g. Ghisetti et al., 2015; D'Este et al., 2012). The barriers for environmentally progressive and moderate SMEs can be regarded as 'revealed' barriers in that these firms have been taking different environmental initiatives and they experienced the hurdles hampering their environmental engagement. In contrast, the environmental barriers often mentioned by environmentally distanced SMEs can be regarded as 'deterrent' barriers in that the responses of owners and managers of these firms are based on perceptions rather than their experiences. Taken together, findings of this chapter and the ones presented earlier in Section 4.2.3 open new avenues for the considerations of public policy managers and intermediary organisations that how they can support leatherworking SMEs for overcoming environmental barriers. In this regard, recommendations are offered in the next, concluding chapter of this thesis (Section 8.6).

## Chapter 8 Concluding discussion and implications

### 8.1 Introduction

This study set out to address the research question '*To what extent do multilevel factors exert isomorphic pressures on leatherworking SMEs in Pakistan to behave environmentally responsibly, and what enables these firms to reduce their environmental footprints in response?*' (Section 1.3.1).

In this regard, one of its objectives has been to explore environmental practices of SMEs in the Pakistan leather industry. The second objective has been to investigate the multilevel (micro-meso-macro) environmental drivers and their interactive effect on the environmental behaviour of these firms. Previously such drivers have been investigated as isolated factors, acting independently from each other, whereas in practice they are more likely to operate in tandem (Section 2.3). Another equally important, third, objective has been to examine the factors and processes *enabling* (as opposed to driving) leatherworking SMEs to adopt environmental practices effectively. In this respect, the study has investigated dynamic capabilities for environmental improvement in these firms because they have only been examined to a very limited extent in the extant business greening literature (Section 2.5). The final, fourth, objective has been to investigate barriers to environmental improvement in leatherworking SMEs. Examining these barriers has been considered prudent to inform policy and practice for advancing environmental sustainability at a larger scale across the leather industry.

This final chapter of the thesis concludes this research while confirming that these objectives have been achieved. The study makes an empirical contribution by generating



rich data on a previously under-researched sector, leather industry, in a developing economy context, Pakistan. Prior research has largely examined the environmental behaviour of SMEs in developed economies (Section 2.5). Distinct institutional structures of developing countries compared to the developed world make it vital to investigate this phenomenon in the context of developing economies (Section 1.2). While such research could make an empirical contribution, it is also suitable for identifying, testing and developing a theoretical framework suitable for studying the environmental behaviour of SMEs in a developing economy context, like Pakistan, where compared to the formal institutional mechanisms, (informal) compensatory institutional structures (Kolk, 2014) offered by proto-institutional forces (environmental support institutes) (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) have been more effective in driving and enabling leatherworking SMEs to adopt environmental practices. In this regard, the study has drawn upon a hybrid theoretical framework, which is underpinned by institutional theory, resource-based view of the firm, natural-resource-based view and dynamic capabilities framework (Section 2.6). Such a framework has been considered necessary realising that a single theoretical lens cannot help understand the broader context in which SMEs operate and how these firms display receptivity to dynamics in their external business environment. The study thus makes a methodological contribution by demonstrating that holistic understanding of the environmental behaviour of SMEs can be better developed through a hybrid framework because it enables the researcher to capture the interactive effect of internal and external factors on the environmental engagement of these firms. The study also makes a theoretical contribution by extending the application of dynamic capabilities framework into the domains of business greening literature and SMEs because this framework has only been used to a very limited extent to examine the

environmental behaviour of SMEs previously. In terms of practical contribution, building on the experiences of the environmental transformation of environmentally progressive and moderate SMEs, it highlights the pragmatic ways of motivating and enabling environmentally distanced SMEs to adopt environmental practices.

The remainder of this chapter is structured in six sections. Section 8.2 presents discussion on key findings. Theoretical, methodological, empirical and practical contributions of the study are presented in Section 8.3. Limitations of this research are discussed in Section 8.4. Possible future research areas are proposed in Section 8.5. Section 8.6 offers recommendations for supporting leatherworking SMEs to enable them to display better environmental performance. Finally, the chapter concludes with reflections on this research (Section 8.7).

## **8.2 Main findings and discussion**

It is a qualitative study and findings are based mainly on inductive analysis of interview data (Section 3.3.4(c)). In addition to the overarching research question (Section 1.3), the analysis has been guided by the following sub-research questions.

- (a) What environmental measures do SMEs in Pakistan's leather industry take to reduce their environmental footprints?
- (b) Why do SMEs in the leather industry adopt environmental practices?
- (c) What are the resources and capabilities that enable these firms to become environmentally responsible enterprises?
- (d) What limits leatherworking SMEs from taking environmental measures?

Informed by Chapter 4, Chapter 5, Chapter 6 and Chapter 7, the key findings and discussion as presented in the following four subsections (8.2.1, 8.2.2, 8.2.3 and 8.2.4) respond to these research questions.

### **8.2.1 Environmental practices and behaviour of leatherworking SMEs**

Pakistan's leather industry is the third largest source of export earnings for the country and is largely dominated by SMEs (Section 1.5). A number of environmental problems are attached with its operations, such as the contaminated wastewater, solid wastes and air pollution, which have been causing health issues for local communities, threatening the existence of marine life and damaging the productivity of agricultural lands (Section 1.5). Consequently, Pakistan's leatherworking firms have been facing considerable pressure from various stakeholders, such as the international buyers, regulatory authorities and intermediary organisations, to reduce their pollution load (Section 5.3). In response, many firms, particularly export-oriented leatherworking units, have started to take different measures for reducing their environmental footprints.

SMEs that participated in this study their environmental actions ranged from pollution control measures, such as setting up effluent treatment plants (firm and cluster level), to pollution prevention initiatives like using environmentally less harmful chemicals and conserving water (Section 4.2). Considering the nature and scale of environmental actions of sample firms, these have been categorised as environmentally progressive, moderate and distanced SMEs (Chapter 4).

Environmentally progressive SMEs display a higher level of environmental commitment and proactively take much advanced environmental measures, such as the adoption of

latest cleaner technologies and undertaking R&D for process innovations (Section 4.2.1), for becoming eco-friendly businesses. While environmentally moderate SMEs also display a higher level of environmental commitment, unlike their environmentally progressive peers, they do not take much advanced environmental measures. A main reason for this is seen as the absence of sufficient economic resources needed for taking such measures. However, SMEs in this category proactively adopt other relatively less expensive cleaner production practices such as the conservation of water and chemicals through process innovations which enable them to reduce their environmental footprints (Section 4.2.2). Contrary to both these categories, environmentally distanced SMEs operate with a very low level of environmental commitment (Section 4.2.3). These firms adopt a reactive approach (del Brío and Junquera, 2003; Aragon-Correa and Sharma, 2003; Tilley, 1999b) and therefore only take those measures (such as conserving water to reduce load on the common effluent treatment plant) that they are forced to take by some institutional forces like the management of combined effluent treatment plants.

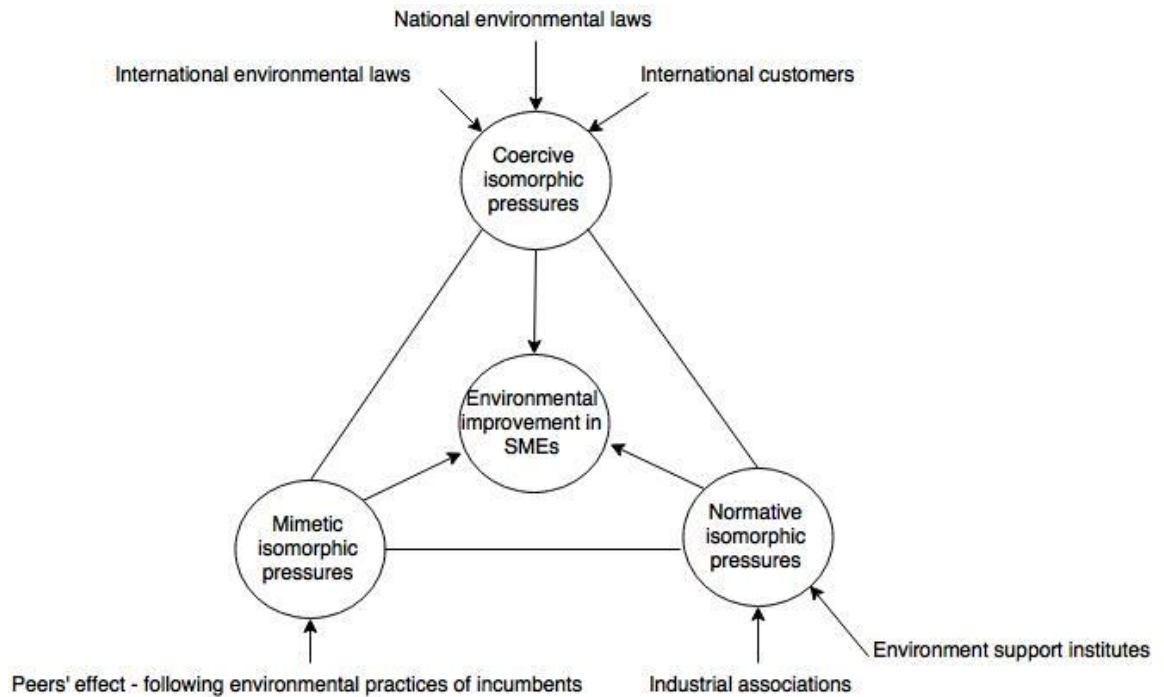
As noted earlier in Chapter 6 (Section 6.1), environmentally progressive and moderate SMEs that currently take environmental measures proactively previously did not have the environmental capabilities needed to adopt these measures. They also lacked the formal institutional support required for developing such capabilities. However, some (informal) compensatory institutional structures (Kolk, 2014) were offered by the environmental support institutes, such as the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI). These institutes performed a proto-institutional role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) and working in collaboration with the leatherworking firms and industry associations offered the much-needed support to SMEs for their environmental capacity building. Thus compared to the formal

institutional mechanisms, (informal) compensatory institutional set-ups proved more influential in institutionalising cleaner production practices in Pakistan's leather industry. These institutional settings make the Pakistani context a useful context for this study, especially when compared to many developed economies where the national governments have been actively supporting SMEs for their environmental capacity building through formal support mechanisms (Blundel et al., 2013; Battaglia et al., 2010; Pimenova and van der Vorst, 2004). The distinct institutional environment in which Pakistan's leatherworking SMEs have been making efforts to reduce their environmental footprints through environmental collaborations with multiple field actors, such as the cleaner production centres and input suppliers, has thus made this country a fascinating context for enquiry.

### **8.2.2 Drivers of environmental improvement in leatherworking SMEs**

Environmentally progressive and moderate leatherworking SMEs adopt environmental practices proactively. Coercive, normative and mimetic forces (DiMaggio and Powell, 1983) simultaneously drive these firms to adopt environmental behaviours (Figure 8.1). Environmentally sensitive international customers, environmental regulations of export markets, national regulatory authorities, environment support institutes and environmentally responsible peers, operating in tandem, offer these pressures to SMEs in the two categories. Nevertheless, in certain instances, the intensity of the impact of each of these factors varies across firms.

**Figure 8.1: Isomorphic pressures driving environmental improvement in environmentally progressive and moderate SMEs**



Source: Developed by the researcher.

Environmentally progressive firms were operating with considerable export concerns (Section 4.2.1), but it was not the case for environmentally moderate SMEs because some of these firms were serving customers in local markets only (Section 4.2.2). For export-oriented firms in the two categories, environmentally sensitive international customers and environmental regulations of export markets act as leading macro-level environmental drivers that offer coercive pressures for these firms to become eco-friendly businesses (Section 5.3.1). Consistent with some earlier studies (e.g. Ortolano et al., 2014; Gombault and Begeer, 2013; Sarkis et al., 2011; Gold et al., 2010), these findings imply that embeddedness in international supply chains exposes these firms to the need for adopting cleaner production practices. Although national regulatory authorities, operating as a macro-level factor, also offer coercive pressures for export-oriented firms in the two categories to behave environmentally responsibly, they are not seen to have been very

influential (Section 5.3.2). Thus, in contrast with some earlier studies, which highlight the role played by regulations in making SMEs behave environmentally responsibly (Masurel, 2007; Studer et al., 2006; Revell and Rutherford, 2003; Tilley, 1999a), *local* and *national*-level regulatory frameworks have not proved particularly effective in the case of Pakistan's leather industry. This is largely because of the prevalence of institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) in the country where environmental regulations and monitoring bodies exist but, due to a number of internal capacity constraints, fail to perform their functions effectively (Section 7.3.1). For example, environmental inspectors are not well paid, so they do not sincerely scrutinise the polluting activities of firms in the industry. These findings are consistent with some other studies from Asian countries, for instance, India, where in certain instances formal institutional forces are observed to have remained less effective due to similar reasons (e.g. Studer et al., 2005).

Normative pressures to adopt cleaner production practices for the export-oriented, environmentally progressive and moderate SMEs are mainly offered by environment support institutes, more specifically the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) (Section 5.3.3). These institutes, operating as meso level factors, provide the (informal) compensatory institutional structures to address some of the institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) in the country. They also perform the proto-institutional role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) in that they make collaborative arrangements with SMEs for advancing environmentally sustainable practices in these firms through various capacity building measures and drive them towards reducing their pollution load. They also magnify the value of complying with environmental regulations and adopting internationally accepted practices for producing leather in an eco-friendly way for these firms (Sections

5.2 and 5.3). By pushing leatherworking firms to adopt cleaner production practices, these institutes thus partly compensate for the lacking coercive institutional pressures to be exerted by the formal institutional mechanisms if they were operating effectively. They also support the offering of mimetic isomorphic pressures by activating peers to lead each other towards environmental improvement (Section 5.3.3). They have been forming working groups of environmentally conscious owner-managers and motivating them to share their environmental learning experiences with others in the industry for encouraging them to adopt similar practices.

For firms operating in domestic market only, international factors like the environmental sensitivity of foreign buyers and environmental regulations of export markets did not make any relevance. For such firms, although local formal institutional forces offer some coercive pressures for environmental improvement, these are not seen to have served as a leading driver of environmental improvement. As noted earlier, it is largely due to the institutional 'gaps' (Kolk, 2014) in the country that the effectiveness of formal institutional mechanisms remains weak. SMEs operating locally are rather largely led by meso-level normative institutional forces, which are offered by the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) to behave environmentally responsibly (Section 5.3). These environment support institutes have been operating as (informal) compensatory institutional structures that also performed a proto-institutional role to lead leatherworking SMEs towards environmental sustainability (Section 5.3.3). Moreover, just like for export-oriented firms, SMEs operating locally also face mimetic pressures for becoming eco-friendly businesses from their peers, which is mediated by the environment support institutes (Section 5.3.3).



The study has also revealed some other important micro-level environmental drivers in environmentally progressive and moderate SMEs (Section 5.3). Consistent with some earlier studies, these include the sustainability-driven values of SME owner-managers (e.g. Hamann et al., 2015; Williams and Schaefer, 2013; Hammann et al., 2009), attraction of economic benefits (e.g. Parry, 2012; Parker et al., 2009; Simpson et al., 2004; Thorpe and Prakash-Mani, 2003) and desire for image building to be known as an eco-friendly firm (e.g. Fuller and Tian, 2006). However, compared to prior studies which have often examined these factors as piecemeal environmental drivers for SMEs (e.g. Williams and Schaefer, 2013), in the Pakistani context, these micro-level drivers do not operate in isolation. They rather interact with other meso and macro-level factors, such as the environmental support institutes and environmentally sensitive buyers, which make their effectiveness stronger (Sections 5.2 and 5.3).

Crucially, the study has shown how both values-based motivations for adopting pro-environmental practices, and a greater awareness of their potential commercial benefits, has largely been mediated by the educational and awareness-raising activities of intermediary organisations, such as the Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) (Sections 5.3.4 and 5.3.5). In contrast with some other developing countries where intermediary organisations have been seen as a less effective driver of environmental improvement for SMEs (e.g. Hamann et al., 2015), this study demonstrates that these organisations have made substantial efforts for developing environmental orientation in the owners, managers and employees of leatherworking SMEs through raising their level of 'eco-literacy' skills (Tilley, 2000). They have made them realise that by becoming environmentally responsible they could simultaneously protect the wider natural environment, serve environmentally sensitive customers, comply with regulations

and achieve eco-efficiency (Section 5.3). While such an active role of intermediary organisations in transforming environmental behaviour of firms has been observed in some European countries (Klewitz et al., 2012; York and Venkataraman, 2010; Pimenova and van der Vorst, 2004; Bruijn and Lulofs, 2001), there these organisations have been financially supported by national governments highlighting the effectiveness of strong institutional structures in these economies. In contrast, the cleaner production centres in Pakistan have not been financially backed by the national government, but by some international sponsors (Ortolano et al., 2014). Moreover, their presence in the industry is largely attributed to the efforts of industry associations which strived to seek support from international actors for the environmental capacity building of leatherworking firms (Section 1.5.3). The study thus demonstrates that in countries like Pakistan where *local* formal institutional mechanisms are less effective, collaborations between other stakeholders of an organisational field having common environmental objectives can lead to the emergence of proto-institutes (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) and (informal) compensatory institutional structures (Kolk, 2014) that can more effectively offer normative pressures (DiMaggio and Powell, 1983) to drive SMEs to behave environmentally responsibly.

More generally, findings reveal patterns of intertwined effects of micro, meso and macro level factors on the environmental engagement of environmentally progressive and moderate SMEs (Figure 5.3). Many respondents from the two categories who referred to pressure from international customers also mentioned about changes in the international environmental regulations, sustainability-driven values and financial benefits driving environmental sustainability in their firms (Section 5.3). There is also evidence that some environmental drivers mediate the influence of others. More specifically environmental

support institutes, CPC and CPI, have been activating sustainability values amongst SME owners, managers and employees, while also raising their awareness about potential commercial gains. The collaborative efforts of the cleaner production centres, international sponsors and local industrial associations, which have also aimed at bringing attitudinal change in human resources in leatherworking SMEs, illustrate how positive environmental outcomes can be achieved through collaborations between micro, meso and macro level factors (Wassmer et al., 2014; Bruijn and Lulofs, 2001).

The importance of social capital clearly emerged. According to Nahapiet and Ghoshal (1998, p. 243), for instance, social capital is ‘the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. [It] thus comprises both the network and the assets that may be mobilized through that network’. While appreciating the value of networks respondents from environmentally progressive and moderate SMEs described how they were influenced by visits to more environmentally engaged SMEs and to environment support institutes, where they observed the successful implementation of cleaner production processes (Section 5.3.3). Peer support and demonstration of successful environmental projects by CPC and CPI provided these SMEs with opportunities to appreciate the value of sustainable practices, which drove these firms to become more sustainable enterprises. These findings reinforce previous work that highlights a key role for effective networks that can exchange environmental knowledge and support SMEs through a successful transformation process to become more eco-friendly businesses (Halme and Korpela, 2014; Wassmer et al., 2014; Parry, 2012; Bruijn and Lulofs, 2001; Shearlock et al., 2000). Particularly, inter-firm collaborations between environmentally

engaged and distanced SMEs can encourage the latter group of firms to adopt environmentally sustainable practices.

It was observed that while religious motivations were rarely identified explicitly most of the respondents also referred to observing the principles of 'benefit stacking' and 'strategic satisficing' (Parrish, 2010). The principle of 'benefit stacking' refers to a firm striving to become efficient by 'stacking as many benefits as possible onto each operational activity' (Parrish, 2010, p. 517), such as environmentally progressive and moderate SMEs have been taking pollution prevention measures which allow these firms to become environmentally responsible and conserve resources as well. The principle of 'strategic satisficing' relates to a firm's efforts to 'strategically identify satisfactory outcomes of multiple objectives' (Parrish, 2010, p. 517), such as environmentally progressive and moderate SMEs have been achieving the economic, social and environmental benefits simultaneously. It implies that SME owner-managers in both categories seek to co-produce multiple benefits for the individual self, other people and the wider natural environment. This emphasis on multiple, *inter-related* benefits, including protection of the planet and a creating better living place for future generations, represent an important addition to our understanding of discrete motivators such as cost-saving or reputational gains.

In summary, given the heterogeneity of institutional structures in countries across the globe (Section 1.2), a holistic multilevel approach provides an effective framework for examining environmental drivers in SMEs. This approach has been operationalised in this study through a hybrid theoretical framework, which is underpinned by institutional theory, resource-based view of the firm, natural-resource-based view and dynamic capabilities framework (Section 2.6). While institutional theory has enabled the research

to understand the behaviour of institutional actors in the organisational field of leatherworking SMEs in that multilevel actors exert isomorphic pressures (DiMaggio and Powell, 1983) on these firms to behave environmentally responsibly, dynamic capabilities framework has been useful in understanding that the market in which these firms are operating is neither static nor highly volatile but moderately dynamic (Eisenhardt and Martin, 2000; Teece et al., 1997). Factors that more strongly contribute to making the market environment moderately dynamic for leatherworking SMEs relate to the emerging environmental requirements of international forces, including the buyers and regulatory and monitoring authorities (Section 5.3.1). These forces set out the international best practices for producing leather in an eco-friendly way. However, these practices are not introduced at a faster pace but are communicated to SMEs in an incremental fashion (Section 5.3.1). Environment support institutes like CPC and CPI further magnify these practices to SMEs through their awareness raising interventions which they make with reasonably regular intervals (e.g. Sections 5.3.1 and 5.3.3). Thus, compared to high-velocity markets such as IT industry where product development processes and practices change at a faster rate, leather production practices do not change at the similar pace which leaves this industry to be regarded as moderately dynamic. Finally, resource-based view has provided a lens, social capital, to understand the role of networks in driving SMEs towards sustainability agenda.

### **8.2.3 Environmental capabilities of leatherworking SMEs**

Having a high level of environmental stewardship, environmentally progressive and moderate SMEs purposefully took measures for advancing their environmental capabilities (Chapter 4 and Chapter 6). Contrary to these two categories, environmentally distanced

SMEs were not environmentally motivated and were also resource deficient (Section 4.2.3). These factors constrained them from advancing environmental capabilities. The discussion below, therefore, does not apply to SMEs in this category.

In contrast with the traditional assumption that resource scarcity can limit proactive environmental engagement of SMEs (Daddi et al., 2010; Parker et al., 2009; Seidel et al., 2009; Vickers et al., 2009; Pimenova and van der Vorst, 2004; del Brío and Junquera, 2003; Schaper, 2002; Tilley, 1999a; Aragón-Correa, 1998), environmentally progressive and moderate SMEs in Pakistan's leather industry do not appear to be at a capability disadvantage which enables them to accumulate, modify and leverage resources needed for innovating environmentally (Halme and Korpela, 2014; Klewitz and Hansen, 2014; Parry, 2012; Hofmann et al., 2012; Bos-Brouwers, 2010; van Berkel, 2007). This allows them to coevolve (Lewin et al., 1999; McKelvey, 1997) with environmental trends in their organisational field and seek legitimacy of their environmental behaviour from various stakeholders, such as the customers and regulatory authorities. Nevertheless, the resource portfolios of firms in the two categories were not similar. Accordingly, the processes that underpinned their environmental capabilities also varied.

The three dynamic capabilities which support environmental transformation in environmentally progressive and moderate SMEs are ecological learning capability (Section 6.2), capability for seizing environmental opportunities (Section 6.3) and enterprise reconfiguration capability (Section 6.4). Ecological learning capability enables these firms to better understand the environmental demands of their customers and regulatory authorities, structural evolution of the leather industry and related international markets, and likely responses of input suppliers and competitors, leading to the identification of

environmental opportunities. Drawing on their dynamic capability for seizing environmental opportunities, environmentally progressive and moderate SMEs reconfigure their resources and innovate production processes which enable them to reduce their environmental footprints and exploit the identified opportunities. In order to sustain their environmental improvement, these firms develop and make a skilful use of enterprise reconfiguration capability. This capability enables them to keep learning and innovating incrementally. It also allows them to reconfigure their absorptive capacity, adapt to the changes in their business environment proactively and therefore coevolve with it.

Environmentally progressive and moderate SMEs display a predisposition to find innovative ways to compensate for their resource shortcomings (Halme and Korpela, 2014; Bos-Brouwers, 2010), which underpin environmental capabilities in these firms. In contrast with the prior literature, which maintains that the development and deployment of dynamic capabilities is an internal function of enterprises (Teece et al., 1997; Ambrosini and Bowman, 2009), this study suggests that the interaction between multilevel factors (micro-meso-macro) enables leatherworking SMEs to own dynamic capabilities for environmental improvement. For example, SME owner-managers and employees (micro-level) through their relationships with international customers (macro-level), environmental support institutes (meso-level), chemical suppliers (meso-level) and research and educational institutes (meso and macro-level) advance their 'eco-literacy' skills (Tilley, 2000), which underpin the ecological learning and enterprise reconfiguration capabilities (Sections 6.2 and 6.4). Holistic understanding of the interactive logic of these micro, meso and macro level factors in the environmental transformation of SMEs is not possible through a single theoretical lens. Such a phenomenon can be better understood through a hybrid

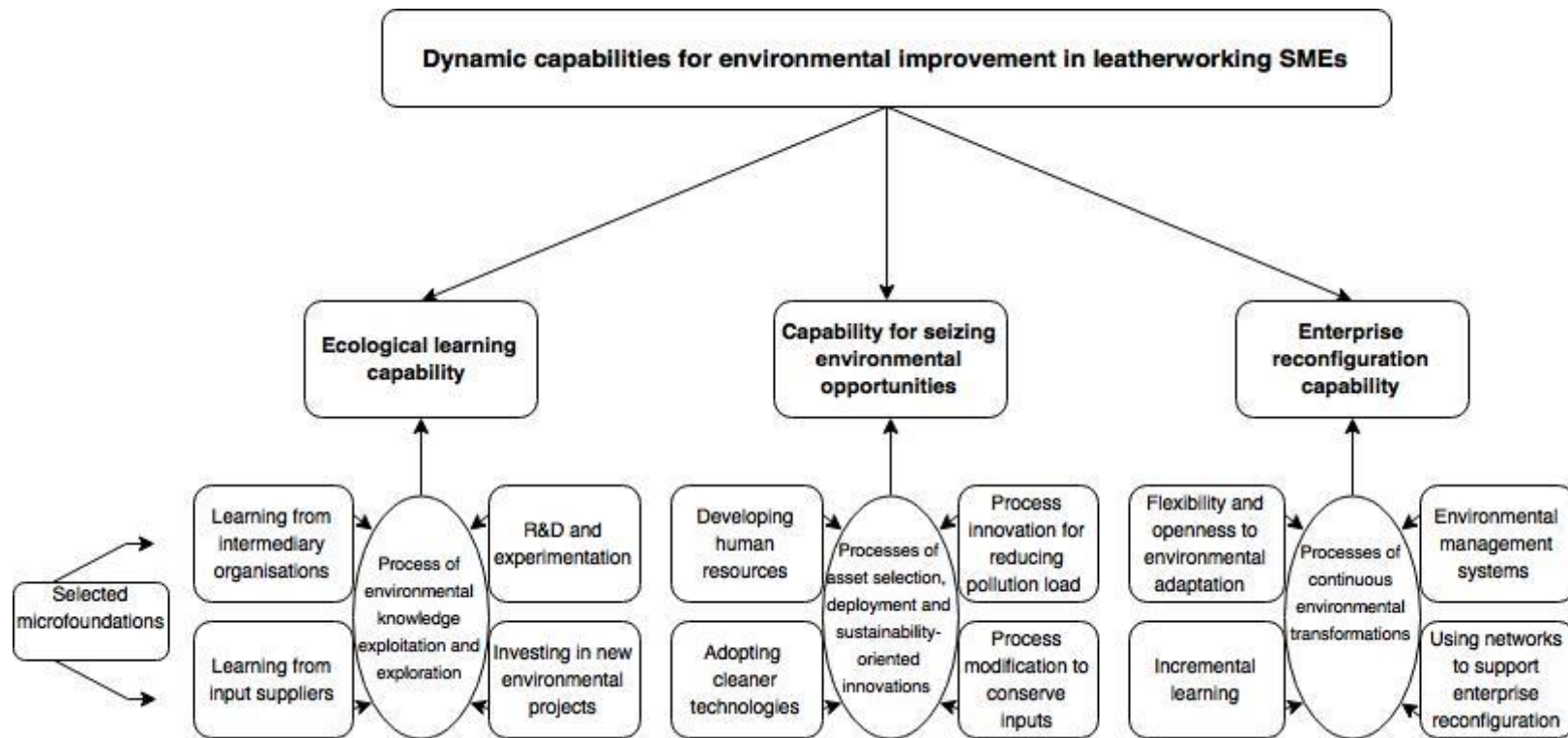
theoretical framework, as has been operationalised in this study by considering together institutional theory, resource-based view of the firm, natural-resource-based view and dynamic capabilities framework (Section 2.6). This hybrid framework has allowed the researcher to effectively examine how various institutional actors of Pakistan's leather industry interact with and mediate the firm level factors (resources and capabilities) and underpin the presence of environmental capabilities in environmentally progressive and moderate SMEs. Next sub-section presents key findings and discussion on the microfoundations of environmental capabilities as identified in the two categories of SMEs. As a reminder, the phenomenon of researching 'microfoundations' relates to unpacking the 'collective concepts to understand how individual-level factors impact organizations, how the interaction of individuals leads to emergent, collective, and organization-level outcomes and performance, and how relations between macro variables are mediated by micro actions and interactions' (Felin et al., 2015, p. 576). While explicating the microfoundations on which firms can build their dynamic capabilities, Teece (2007, p. 1319) has argued that this phenomenon relate to 'the distinct skills, processes, procedures, organizational structures, decision rules, and disciplines' which 'undergird enterprise-level sensing, seizing, and reconfiguring capacities'.

### ***Microfoundations of environmental capabilities***

Adapting pictorial structure from Teece (2007), Figure 8.2 helps summarise the key microfoundations (Felin et al., 2015; Barney and Felin, 2013; Felin et al., 2012; Teece, 2007) that underpin dynamic capabilities for environmental improvement in environmentally progressive and moderate SMEs.



Figure 8.2: Environmental capabilities and their microfoundations



Source: Pictorial structure adapted from Teece (2007) to accommodate the key findings of the study.

These microfoundations demonstrate the interactive role of multilevel factors (micro-meso-macro) in enabling SMEs in the two categories to own environmental capabilities. It is, however, noteworthy that the microfoundations of environmental capabilities as identified vary across firms according to their resource portfolios (Chapter 6).

**(a) *Dynamic capability for ecological learning***

The microfoundations of ecological learning capability relate to the knowledge exploitation and exploration processes (Figure 8.2). Exploitation processes comprise the initiatives of environmentally progressive and moderate SMEs for acquiring existing environmental knowledge resources, such as they gather environmental information from intermediary organisations and input suppliers (Section 6.2.1). Exploration processes relate to those actions of these firms through which they search for new environmental knowledge, for example by undertaking R&D (Section 6.2.2).

Both these knowledge seeking processes have different intensity of resource consumption. Compared to knowledge exploitation, engagement with exploration initiatives require more resources. While all environmentally progressive and moderate SMEs seek ecological knowledge through exploitation processes, knowledge exploration seems to remain a hallmark of firms in the earlier category as they own sufficient resources to undertake in-house R&D and search new ecological knowledge (Section 6.2). Nevertheless, some of the environmentally moderate firms manage to compensate for their resource deficiency by collaborating with other stakeholders like the environment support institutes, input suppliers and product testing labs. They use their facilities for undertaking R&D and searching new knowledge to make their process more eco-efficient (Section 6.2).

It implies that those leatherworking SMEs in the two categories that simultaneously acquire ecological knowledge from existing sources and search new knowledge to innovate their processes for becoming eco-friendly businesses they own the characteristic of 'organisational ambidexterity' (O'Reilly and Tushman, 2008; Tushman and O'Reilly, 1996). It relates to a firm's ability to acquire the existing resources and create the new ones simultaneously to survive in the face of change (O'Reilly and Tushman, 2008; Tushman and O'Reilly, 1996). And environmentally progressive and moderate SMEs were acquiring ecological knowledge to adequately cope up with the emerging changes in environmental requirements and standards of various stakeholders, such as the environmentally sensitive international customers and regulatory authorities in export markets. It also suggests that ecological learning supports the advancement of absorptive capacity in these firms, which is an ability that relates to a firm's capacity to recognise the value of new, externally situated knowledge, assimilate that, and apply that to commercial ends (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990). New knowledge also advances sensing capability (Teece, 2007) in SMEs in the two categories. This capability enables them to remain vigilant about environmental trends in their organisational field and identify environmental opportunities, which drive these firms to coevolve (Lewin et al., 1999; McKelvey, 1997) with the moderately dynamic business environment (Eisenhardt and Martin, 2000), for example through the diffusion of process innovations and cleaner technologies (Klewitz and Hansen, 2014; Ortolano et al., 2014). As noted at different points in the thesis (e.g. Section 5.3.1), factors that more strongly contribute to making the market environment moderately dynamic for leatherworking SMEs relate to the emerging environmental requirements of international forces, including the buyers and regulatory and monitoring authorities. These forces set out the international best practices for

producing leather in an eco-friendly way. However, these practices are not introduced at a faster pace but are communicated to SMEs in an incremental fashion (Section 5.3.1). Environment support institutes like CPC and CPI further magnify these practices to SMEs through their awareness raising interventions which they make with reasonably regular intervals (e.g. Sections 5.3.1 and 5.3.3). Thus, compared to high-velocity markets such as IT industry where product development processes and practices change at a faster rate, leather production practices do not change at the similar pace which leaves this industry to be regarded as a moderately dynamic sector.

Interaction between multilevel (micro, meso and macro) factors support environmentally progressive and moderate SMEs for creating, extending and modifying their environmental knowledge resources. To illustrate, export-oriented SMEs (micro-level) in the two categories sit between environmentally sensitive large size international buyers (macro-level) and responsible chemical suppliers (macro-level). Such an embeddedness in sustainable supply chains (Hofmann et al., 2012; Gold et al., 2010) allows these firms to exploit ecological learning opportunities better because both these international actors provide them with the environmental information. While customers tell them about their environmental requirements, chemical suppliers help them to meet those requirements by making them aware of environmentally less harmful inputs. Consistent with some earlier studies (Klewitz and Hansen, 2014; Parry, 2012; Battaglia et al., 2010), findings thus suggest that, compared to the formal learning channels, informal learning networks play a more effective role in the environmental capacity building of environmentally progressive and moderate SMEs. The concept of learning networks here refers to the environmental knowledge sharing mechanisms which help SMEs advance their ecological knowledge resources (Klewitz and Hansen, 2014; Parry, 2012; Battaglia et al., 2010). To add some

examples of learning networks, environmental support institutes (meso-level), CPC and CPI, which seek to enhance 'eco-literacy' skills (Tilley, 2000) amongst SME owners, managers and employees (micro-level) through arranging lectures, workshops, seminars and on site trainings also filter the information coming from the international buyers and chemical companies (macro-level) in order to make that more comprehensible for human resources of SMEs through demonstration projects of cleaner production processes (Sections 5.3.1 and 6.2.1). Similarly, some of the environmentally moderate SMEs (micro-level) lacking in-house R&D facilities draw on their collaborations with foreign chemical suppliers (macro-level) and (local and international) product testing labs (meso and macro-level) to benefit from their research facilities (Section 6.2.2). Due to the presence of support from such institutional actors in the Pakistan leather industry, unlike in some other countries (Walker et al., 2008; Revell and Blackburn, 2007; Pimenova and van der Vorst, 2004), access to informational resources does not appear to remain a significant barrier to environmental engagement of SMEs. The active learning relationships of environmentally progressive and moderate SMEs with various actors of their organisational field also highlight the positive outcomes of environmental collaborations (Klewitz and Hansen, 2014; Hofmann et al., 2012; Wassmer et al., 2014; Gold et al., 2010; Daddi et al., 2010) for acquiring ecological knowledge resources, which are necessary to achieve effective response to environmental pressures (Sarkis et al., 2010). Such environmental collaborations carry even more value for resource deficient SMEs (Williams and Schaefer, 2013; Hammann et al., 2009) because it is through the learning networks (Klewitz and Hansen, 2014; Parry, 2012; Battaglia et al., 2010) that they can acquire ecological knowledge needed for environmental improvement despite not having sufficient financial resources.

The above findings also imply that the learning networks emanating from the interactions between micro, meso and macro level factors support the advancement in pollution prevention and product stewardship capabilities of environmentally progressive and moderate SMEs. As a reminder, pollution prevention capability relates to the ability of a firm to prevent the waste and reduce emissions from its production processes (Hart, 1995). And product stewardship capability refers to the ability of a firm to integrate external (stakeholders) perspectives into the product design and development processes, enabling it to address environmental concerns spanning along its entire value chain or life cycle of its production systems (Hart, 1995).

***(b) Dynamic capability for seizing environmental opportunities***

The microfoundations of capability for seizing environmental opportunities comprise the processes of asset selection, deployment and sustainability-oriented innovations (Figure 8.2). Ecological learning reveals environmental opportunities to environmentally progressive and moderate SMEs, such as commercial gains attached with serving environmentally sensitive buyers, cost savings through cleaner production processes and compliance with regulations allowing avoidance of penalties. In order to exploit such opportunities, SMEs in the two categories develop 'eco-literacy' skills (Tilley, 2000) amongst their employees. These skills enable them to understand and implement/follow the principles of environmental protections. Environmental capacity building of human resources also supports the advancement in absorptive capacity of leatherworking SMEs, which relates to a firm's ability to recognise the value of new, externally situated knowledge, assimilate that, and apply that to commercial ends (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990). Thus, improvement in absorptive capacity

enables environmentally progressive and moderate SMEs to diffuse ecological learning effectively.

Owner-managers of resource rich firms receive formal education about leather processing from internationally known institutes and cascade that to their employees through in-house trainings (Section 6.3.1). They also seek support from environment support institutes like Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI) for educating and training their employees environmentally. On the other hand, less-resource rich firms whose owner-managers cannot afford to have formal education from well reputed international educational institutes they arrange on site trainings for their staff with the help of a number of institutional actors including the chemical companies, CPC and CPI (Section 6.3.1). Through training their employees, owner-managers of environmentally progressive and moderate SMEs also strive to promote shared vision (Aragón-Correa et al., 2008) in their firms in that they inspire their staff to achieve the common goal of pollution control as a team.

Environmental collaborations of SMEs with the intermediary organisations and input suppliers for developing their human resources compensate for the financial resources these firms might have to deploy otherwise, and which the environmentally moderate SMEs, more specifically, often do not possess or struggle to raise. These findings imply that the interaction between micro (owner-managers and employees), meso (CPC and CPI) and macro (international chemical companies) level actors underpin the capability for seizing environmental opportunities in environmentally progressive and moderate SMEs.

The cleaner technology adoption processes also serve as microfoundations that underpin the capability for seizing environmental opportunities in environmentally progressive and

moderate SMEs. Such technologies enable firms in the two categories to implement responsible process innovations. However, these technologies vary in line with the resource endowment of leatherworking firms. Resource rich and operationally more active firms, such as environmentally progressive SMEs in this study, invest in advanced cleaner technologies including the roller-coating machines and effluent treatment plants (Section 6.3.1). In contrast, less resource rich firms, such as environmentally moderate leatherworking firms, can only afford to buy simpler technologies like the dust collectors and steamers for water heating (Section 6.3.1). However, some of the environmentally progressive and moderate SMEs also prefer to modify their existing technological assets to conserve inputs (Section 6.3.1). The choice for modifying technological assets is strongly mediated by the interest, skills and knowledge of owner-managers. More knowledgeable owner-managers, for example, those who develop their knowledge resources by getting formal education or through networking with technology consultants, take such measures relatively proactively (Section 6.3.1). Nevertheless, in some tannery clusters, like Kasur and Karachi, less resource rich environmentally moderate SMEs have adopted a 'coopetition' approach [cooperation between competitors] (Daddi et al., 2010; Biondi et al., 2002) for acquiring advanced cleaner technologies. They have been successful in setting up combined effluent treatment plants by sharing their limited resources. This refers to the effective deployment of social capital (Gergs, 2003; Nahapiet and Ghoshal, 1998; Fuller and Tian, 2006; Coleman, 1988; Adler and Kwon, 2002) by such firms, in that they have been able to form environmental collaborations (Wassmer et al., 2014) to reap techno-economic benefits (Montalvo, 2008). This study, hence, supports the literature that suggests for adopting cluster based approaches to enable SMEs to address their issues of resource scarcity regarding environmental improvement (de Oliveira and Jabbour, 2015; Martínez-



del-Río and Céspedes-Lorente, 2014; Weltzien Høivik and Shankar, 2011; Daddi et al., 2010; Battaglia et al., 2010). This approach seems more effective for a developing economy like Pakistan where national government does not show much interest in the environmental improvement of SMEs through firm level interventions (Section 1.5.3).

Ability to implement sustainability-oriented process innovations, which, for example, enable environmentally progressive and moderate SMEs to achieve eco-efficiency through controlling input intensity of their processes (Ortolano et al., 2014; van Berkel, 2007), also developed through environmental collaborations (Section 6.3.2). Through ecological learning, these firms realise the benefits of environmental innovations and develop their know-how about implementing these innovations. They demonstrate their absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) by diffusing environmental learning in the form of process innovations. It suggests that the capabilities for seizing environmental opportunities and ecological learning are interlocked with each other. Unless SMEs learn about environmental opportunities, they cannot exploit these. Similarly, the challenges that these firms face during opportunity exploitation generate more demand for ecological learning. Responsible process innovations comprise initiatives such as conserving water, using environmentally less harmful chemicals and controlling power consumption. Through the adoption of these measures, SMEs also demonstrate that they have developed the pollution prevention and product stewardship capabilities (Hart, 1995). Pollution prevention capability relates to the ability of a firm to prevent the waste and reduce emissions from its production processes (Hart, 1995). And product stewardship capability refers to the ability of a firm to integrate external (stakeholders) perspectives into the product design and development processes, enabling it to address environmental concerns spanning along its entire value chain or life cycle of

its production systems (Hart, 1995). In fact, these capabilities serve as precursors to the presence of capability for seizing environmental opportunities. It is also noteworthy that owner-managers of environmentally progressive and moderate SMEs do not make decisions for implementing environmental innovations on ad hoc basis. They appreciate the economic and competitiveness benefits attached with these innovations and make strategic decisions to exploit these benefits. It suggests that these firms are also strategically proactive (Aragón-Correa et al., 2008), an ability of a firm to initiate changes in its practices and processes proactively rather than just reacting to events in its business environment.

***(c) Dynamic capability for enterprise reconfiguration***

Strategic proactivity (Aragón-Correa et al., 2008) leads environmentally progressive and moderate SMEs to sustain their environmental performance. They achieve this through enterprise reconfiguration capability. This capability enables SMEs to escape from getting entangled into a capability trap (Siggelkow and Levinthal, 2005). If they do not upgrade their existing set of environmental capabilities, in the long run that might hinder them from coevolving (Lewin et al., 1999; McKelvey, 1997) with their moderately dynamic market environment as well as limit their environmental improvement (Ambrosini et al., 2009; Eisenhardt and Martin, 2000).

The microfoundations that underpin this environmental capability relate to the processes of continues environmental transformation in the two categories of leatherworking SMEs (Figure 8.2). These processes are supported by firms' ability to remaining open and flexible to adapt to changes while innovating purposefully, constantly and incrementally (Parry, 2012; Eisenhardt and Martin, 2000). This allows these firms to adopt a pragmatic approach

towards their environmental improvement. SMEs' environmental management capabilities and their networking potential also underpin this capability. Collectively, these processes enable environmentally progressive and moderate SMEs to 'coevolve' (Lewin et al., 1999; McKelvey, 1997) with the changes in their organisational field and maintain their 'evolutionary fitness' (Helfat et al., 2007) in that they become able to sustain their environmental competitiveness and generate sufficient economic rents (Simpson et al., 2004).

Nevertheless, these microfoundations of enterprise reconfiguration capability vary across firms according to their resource portfolios (Section 6.4). For instance, while some of the export-oriented environmentally progressive and moderate SMEs, largely led by their customers' requirements, keep transforming environmentally in a more formalised manner, for example by following the guidelines of ISO 14001 environmental management systems, the others do it in a less formal way (Section 6.4). However, resource rich environmentally progressive firms aspire following more formalised systems of environmental upgradations and some of these have already started taking measures in this regard. For example, they are getting Business Social Compliance certifications (Section 6.4.3). In contrast, many environmentally moderate SMEs despite aspiring to follow formalised systems for environmental improvement find it hard to adopt these because of resource constraints (Section 6.4.3). So they are happy to make environmental progress through following environmental management systems informally (Section 6.4.3).

However, some factors commonly underpin enterprise reconfiguration capability across environmentally progressive and moderate SMEs. More specifically, human and social capital mediate the presence and effectiveness of the microfoundations of this

environmental capability in the two categories of SMEs (Augier and Teece, 2009; Dakhli and De Clercq, 2004; Gergs, 2003; Blyler and Coff, 2003; Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Coleman, 1988). For example, these are the environmentally proactive owner-managers who ensure that their firms remain open and flexible to adapt to changes in the organisational field, and in doing so, they adopt a pragmatic approach to allocate resources, for example, for implementing environmental innovations incrementally (Parry, 2012; Augier and Teece, 2009). At the same time, by deploying social capital, they form learning networks (Klewitz and Zeyen, 2010; Battaglia et al., 2010) while collaborating with environmental support institutes, research organisations, and input suppliers, ensuring continuous improvement in 'eco-literacy' skills (Tilley, 2000) of human resources.

#### **8.2.4 Barriers to environmental improvement in leatherworking SMEs**

SMEs in the Pakistan leather industry face a number of internal and external barriers that hamper their environmental improvement (Section 4.2.3 and Chapter 7). These barriers range from being individual specific (e.g. eco-illiterate owner-managers and labour-force) to organisational level (e.g. financial constraints), societal level (e.g. environmentally less sensitive community), and institutional level (e.g. lack of support from national government and weaker enforcement of regulations). Although the environmental barriers as identified do not appear to be surprisingly new to greening business literature on SMEs (Section 2.4.1), this study makes a contribution by uncovering the contextually situated constraints in three different categories of leatherworking SMEs: (a) environmentally progressive, (b) environmentally moderate and (c) environmentally distanced firms. Such knowledge can be useful for informing both policy and practice.

During the inductive coding process of data analysis (Section 3.3.4(c)), environmental barriers were rendered to a binary classification, internal and external. However, in practice, instead of having a piecemeal impact, often these multilevel (micro-meso-macro) barriers operate in tandem with each other and impede SMEs' ability to curtail their environmental footprints. In fact, some of these barriers mediate the presence of others. For example, an environmental support institute, Cleaner Production Centre (CPC), has been operating at the industry level (meso level) with the financial assistance from an international sponsor, Norwegian Agency for Development and Cooperation (NORAD). However, in the recent years due to this financial support coming to an end and national government not backing this centre, it has been struggling to offer consistent environmental support to SMEs (Section 7.3.4). It has constrained the access of SME owner-managers and their workers (micro level) to environmental information, education and trainings, which in turn is seen to have hampered environmental improvement in some firms in Sialkot region, more specifically in the category of environmentally moderate SMEs because they lack sufficient resources to gather the similar information from expensive alternative sources. Moreover, the normative isomorphic pressure (DiMaggio and Powell, 1983) that CPC has been exerting on leatherworking SMEs to adopt cleaner production practices seems to be fading away.

At the same time, due to poor infrastructural facilities (macro level), environmentally progressive and moderate SMEs (micro level) are facing challenges in achieving eco-efficiency (van Berkel, 2007) because they have to arrange inputs at a higher cost, such as buying expensive imported chemicals and relying on expensive modes of electricity generation like diesel generators (Section 7.3.2). In addition, because of **the** complex environmental regulations and their weaker enforcement (macro level), environmental

monitoring of industry's polluting activities is seen to have remained poor (meso level) allowing some SMEs (micro level) to adopt a resistant environmental strategy and 'display omitted environmental behaviour' (Tilley, 1999b) which hampers the environmental competitiveness of their peers (micro level) and discourages them from taking environmental measures (Section 7.3.1).

Findings also provide an opportunity to highlight that some environmental barriers operate as critical or 'effective' constraints (Murillo-Luna et al., 2011), while others as lesser intense inhibitors. For example, for environmentally progressive SMEs labour-related barriers that are primarily caused by their lack of education and rigid attitude towards learning and diffusing eco-innovations serve as critical constraints to environmental improvement (Murillo-Luna et al., 2011; Walker et al., 2008; del Brío and Junquera, 2003; Tilley, 2000). Financial barriers were not much strongly mentioned by respondents in this category. Possibly, because these firms were progressing well and often were able to manage the economic resources needed for their environmental improvement (Section 7.2). On the other hand, amongst environmentally moderate SMEs, critical environmental barriers (Murillo-Luna et al., 2011) are seen to arise mainly from the budgetary constraints (Seidel et al., 2009; del Brío and Junquera, 2003) and environmentally conservative attitude of employees which is underpinned by their lack of eco-literacy skills (Murillo-Luna et al., 2011; Walker et al., 2008; del Brío and Junquera, 2003; Tilley, 2000). In the third category of SMEs, environmentally distanced firms, critical environmental barriers (Murillo-Luna et al., 2011) are seen as limited environmental competency of owner-managers (Revell and Blackburn, 2007; Tilley, 1999a), which is further reinforced by them getting acclimatised with polluted environment and, in some cases, by their behavioural rigidities (Murillo-Luna et al., 2008; Shi et al., 2008) towards adopting environmental practices (Section 4.2.3).

In contrast with some previous studies (e.g. Walker et al., 2008; Revell and Blackburn, 2007; Pimenova and van der Vorst, 2004), which refer to informational barriers limiting the environmental engagement of SMEs, in Pakistan's leather industry firms do not appear to have been facing such barriers, at least not the environmentally progressive and moderate SMEs. This is because, by deploying their social capital (Adler and Kwon, 2002; Nahapiet and Ghoshal, 1998; Gergs, 2003; Coleman, 1988), these firms enter into environmental collaborations (Wassmer et al., 2014), for example with intermediary organisations and chemical companies, and access the environmental knowledge and receive trainings from these institutional actors (Ortolano et al., 2014). Nevertheless, other owner-managers, who lack environmental motivation, such as in the case of environmentally distanced SMEs, appear to have remained deprived of the benefits from such knowledge repositories. Thus, it is only in such cases that lack of environmental information can be seen as a critical environmental barrier.

At the external level, critical environmental barriers relate to institutional 'gaps' (Littlewood and Holt, 2015b, Kolk, 2014) that prevail because of lack of support from the national government (Massoud et al., 2010) and complex environmental regulations (Wilson et al., 2012; Mir, 2008) coupled with their weaker enforcement (Shi et al., 2008). These findings from Pakistan reinforce the argument that

*'Traditional command-and-control approaches to environmental protection and occupational safety are largely ineffective due to lack of enforcement capability, inadequate legislative frameworks, pervasive informality, high rates of poverty, and limited human capital in most developing countries. They tend to place a heavy*

*burden on governmental enforcement agencies that have limited human and financial resources'* (Wenner et al., 2004, p. 108).

Another equally crucial external barrier is under-developed infrastructure (Revell et al., 2010; Vernon et al., 2003), which is seen to have been limiting SMEs' access to appropriate drainage facilities, internationally accredited laboratories at the local level, uninterrupted supply of utilities and environmentally less harmful inputs from the local chemicals industry. These barriers not only challenge leatherworking SMEs, more specifically resource deficient environmentally moderate firms, to reduce their environmental footprints by controlling pollution but also constrain them from achieving eco-efficiency (Section 7.3.2).

The gravity of these critical external barriers seems to increase manifold when SMEs do not face strict social accountability of their environmentally irresponsible behaviour (Shen et al., 2015; Ortolano et al., 2014). Crucially, the tolerance level of the community for environmental degradation (Spence et al., 2000) appears to be quite high in Pakistan. Major reasons for this are seen as the absence of environmental awareness amongst general public at a larger scale and their limited interest in the issues of environmental deterioration, in addition to the acute dependency of local communities on leatherworking firms in terms of their earnings (Sections 4.2.3 and 7.3.3).

By way of comparison, the relative effectiveness of internal and external environmental barriers can also be judged from the findings of this study. While a number of external barriers limiting sample SMEs from making environmental improvement are identified, it appears that it is the internal barriers which chiefly hamper their environmental progress (Hillary, 2004; Murillo-Luna et al., 2011; Murillo-Luna et al., 2007). For example, if SMEs



possess sufficient resources (financial and human) and capabilities to overcome the internal hurdles, as environmentally progressive and moderate SMEs have been able to do (Chapter 6), then the possibility of being hampered by external barriers can decrease, and firms may move up the environmental performance curve (Post and Altma, 1994). Similarly, if the resistant environmental behaviour of owner-managers of environmentally distanced SMEs is transformed into a proactive environmental behaviour, then these firms may also start taking environmental measures. Such findings hence suggest for environmental interventionists, both private and public, to help SMEs in overcoming their internal barriers on priority basis, because external barriers, such as institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014), can be tackled alongside as they would require a longer time period to be addressed.

### **8.3 Contributions of the study**

This research makes a number of contributions.

#### **8.3.1 Theoretical contribution**

The theoretical frameworks on which this study has drawn upon to investigate the dynamics of environmental sustainability in leatherworking SMEs are institutional theory, resource-based view of the firm (RBV), natural resource-based view (NRBV) and dynamic capabilities perspective (DCs) (Section 2.6). Recently, the application of these frameworks has been identified as a way forward for a stronger theoretical debate in the nascent research area of sustainability in SMEs (e.g. Klewitz and Hansen, 2014; Hofmann et al., 2012). By operationalising these theoretical lenses, this study hence addresses the need

identified in the literature regarding the theoretical advancement of the field of greening business literature in the context of SMEs.

While many previous studies have used institutional theory and RBV to examine the environmental behaviour of larger size firms and SMEs (e.g. Halme and Korpela, 2014; Sarkis et al., 2010; Michalisin and Stinchfield, 2010; Aragón-Correa et al., 2008; Berrone et al., 2007; Clemens and Douglas, 2006; Bansal, 2005; Rivera, 2004; Bansal and Clelland, 2004; Delmas, 2002; Bansal and Roth, 2000; Russo and Fouts, 1997), the application of dynamic capabilities framework in the domain of greening literature, in general, and for studying the environmental behaviour of SMEs, in particular, remains sparse. Even within the general literature on dynamic capabilities, compared to large size firms, the number of studies on SMEs is far smaller (Barreto, 2010; Wang and Ahmed, 2007). Similarly, in the greening literature, studies using this theoretical framework mostly have focused on large size firms (Aragon-Correa and Sharma, 2003). The reason for researchers to have used this framework less frequently in SMEs can be that unlike large size firms, which have established routines and processes, and also possess enough resources and capabilities to develop and reconfigure these, smaller businesses are managed relatively less formally and it can be hard to identify instances of the emergence of dynamic capabilities in them. While some researchers have recently started to explore environment specific dynamic capabilities in SMEs (Hofmann et al., 2012), the knowledge about such capabilities and the microfoundations (Felin et al., 2015; Felin et al., 2012; Devinney, 2013; Barney and Felin, 2013; Teece, 2007) that underpin these still remains limited. By investigating dynamic capabilities for environmental improvement in leatherworking SMEs (Chapter 6), this study has thus contributed to both general literature on dynamic capabilities and business greening literature (Ridder et al., 2009; Snow, 2004). It has also extended the application

of dynamic capabilities framework (Ridder et al., 2009; Snow, 2004) within the domain of sustainability and SMEs, and hence supports the recent studies suggesting that the development and deployment of environmentally relevant capabilities is crucial for better, consistent and proactive environmental engagement of SMEs (Halme and Korpela, 2014; Chen and Chang, 2013; Hofmann et al., 2012; Aragón-Correa et al., 2008; Hart, 1995).

The study also offers a contribution by investigating the microfoundations, the underlying processes and procedures (Felin et al., 2015; Felin et al., 2012; Devinney, 2013; Barney and Felin, 2013; Teece, 2007), that underpin the identified environmental capabilities (Chapter 6) because these have not been investigated in-depth in previous studies (e.g. Hofmann et al., 2012). Environmentally progressive and moderate SMEs in the Pakistan leather industry do not follow these processes and procedures on ad hoc basis. Behaving like ‘advantage-driven’ SMEs (Parker et al., 2009), they adopt these processes intentionally and strategically (Aragón-Correa et al., 2008). The influential factors enabling these firms to achieve this purposefully are the social capital, drawing on which they form environmental alliances for environmental improvement, and environmentally proactive owner-managers, who leverage resources for environmental improvement in accordance with changes in the organisational field (Chapter 6). These findings confirm the arguments made elsewhere in the literature that social capital and abilities of a firm’s managers, generally owner-managers in the case of SMEs, can serve as seedbeds for the presence of dynamic capabilities in firms (Augier and Teece, 2009; Blyler and Coff, 2003). However, specific to the Pakistani context is the additional vital role of (informal) compensatory institutional structures (Kolk, 2014) offered by the environmental support institutes, Cleaner Production Centre (CPC) and Cleaner Production Institute (CPI), which also acted as proto-institutional forces (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002), and

supported and enabled environmentally progressive and moderate SMEs to build their environmental capabilities. The interactions between leatherworking SMEs and these institutes that focus on the environmental capacity building of these firms and therefore underpin environmental capabilities, make the presence of these capabilities a boundary spanning phenomenon rather than an internal function of these firms. CPC and CPI, by collaborating with local industry associations have been arranging various trainings, workshops and seminars for SME owners, managers and employees aimed at enhancing their 'eco-literacy' skills (Tilley, 2000) that are seen to have served as one of the key microfoundations of environmental capabilities. This study thus demonstrates that there is value in adopting qualitative research approach because it allows to investigate the underlying mechanisms of environmental transformation in SMEs better.

### **8.3.2 Methodological contribution**

This study offers a methodological contribution by demonstrating that the use of a hybrid theoretical framework is a more effective approach for developing holistic and better understanding of the dynamics of environmental sustainability in SMEs. It is because a single theoretical lens does not seem to help understand the boarder picture of the context in which SMEs operate, and that how firm-level factors (resources and capabilities) display receptivity to dynamics in the external business environment (for example, external drivers of sustainability). The study, for instance, demonstrates that institutional theory and dynamic capabilities framework are useful for examining why SMEs transform their environmental behaviour. It is through institutional theory that coercive, normative and isomorphic pressures (DiMaggio and Powell, 1983) that multilevel factors exert on leatherworking SMEs to behave environmentally responsibly have been identified (Chapter

5). Similarly, this theory has also enabled the researcher to investigate that compared to *local* formal institutions these are the (informal) compensatory institutional structures (Kolk, 2014) and proto-institutional forces (Zietsma and McKnight, 2009; Gómez and Atun, 2013; Lawrence et al., 2002) that have been more influential in institutionalising cleaner production in the leather industry. It seems that CPC and CPI by offering normative pressures for SMEs to behave environmentally responsibly have to a greater extent compensated for lacked coercive isomorphic pressures that formal institutions could have exerted if they were not constrained by their internal resource capacity. Supporting institutional theory, dynamic capabilities framework has helped the researcher to examine SMEs' behaviour in response to changes in their business environment i.e. why they have developed dynamic capabilities for environmental improvement. For instance, volatility in market emerged when international environmental regulations became strict and also the number of environmentally sensitive buyers started to increase. This, in turn, led to a transformation in the chemical industry also in that international chemical companies started to produce environmentally less harmful chemicals, a key input to the leather industry. In order to ensure their survival in the competitive market and seek legitimacy of their behaviour and existence from various institutional actors, SMEs started to use such chemicals allowing them to adapt to the dynamic market environment. How leatherworking SMEs have been able to raise the resources and capabilities needed for effectively respond to changes in their organisational field has been investigated through RBV, NRBV and dynamic capabilities framework. It is through these frameworks that the researcher has been able to identify that environmentally progressive and moderate SMEs draw on resources like social capital (Gergs, 2003; Nahapiet and Ghoshal, 1998; Coleman, 1988; Adler and Kwon, 2002) and human capital (Dakhli and De Clercq, 2004; Augier and

Teece, 2009) that underpin their environmental capabilities. These frameworks have also allowed the researcher to conclude that some other capabilities such as pollution prevention and product stewardship (Hart, 1995), in addition to the absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) and strategic proactivity (Aragón-Correa et al., 2008), serve as precursors to the presence of dynamic capabilities for environmental improvement in the two categories of SMEs. Thus, for future fieldwork-based studies the choice of a hybrid theoretical framework, as has been made in this research, can be useful for examining how the contextually situated external factors operate in tandem with enterprise level factors and support the environmental transformation in SMEs.

### **8.3.3 Empirical contribution**

There is academic value in exploring new contexts, the developing economies, in order to advance the nascent field of research on sustainability in SMEs (Chapter 1). Hitherto, research on the environmental engagement of SMEs has been largely undertaken in the context of developed economies, which have distinct institutional structures compared to developing countries (Section 1.2). Therefore, findings from these countries cannot be generalised globally. The research in contextual settings of developing countries is thus vital, mainly, because of the heterogeneity in institutional setups (Jamali et al., 2015; Hamann et al., 2015; Ortolano et al., 2014; Blundel et al., 2013; Battaglia et al., 2010; Tewari and Pillai, 2005), resources and capabilities endowment of SMEs (Hsu and Cheng, 2012; Ciccozzi et al., 2003) and cultural and religious values (Abdelzaher and Abdelzaher, 2015) of these economies. All these contextual factors can have bearing on the environmental behaviour of SMEs. By generating rich data about environmental sustainability in SMEs on

a previously under-researched sector, leather industry, in a developing economy context, Pakistan, this study offers an empirical contribution to knowledge as it responds to the widespread calls in the literature that research should pay greater attention to investigating developing country contexts if we are to fully understand the environmental behaviour of SMEs globally (Jamali et al., 2015; Hamann et al., 2015; Spence and Painter-Morland, 2010).

At several points in this study it has been discussed (for example, Section 7.3) that the contextual settings of Pakistan's economy are different from most of the developed economies, such as Italy, where national governments have been much active in supporting leatherworking SMEs to overcome barriers to their environmental improvement (Battaglia et al., 2010; De Gisi et al., 2009). While leatherworking firms in Pakistan face a number of environmental challenges, the support from national government to enable these firms to address these issues has remained limited. However, by entering into environmental collaborations with different institutional actors (Section 6.2), environmentally progressive and moderate SMEs have been successful in addressing a number of environmental challenges. For example, they have reduced their pollution load by adopting cleaner production practices and through process innovations (Section 6.3.2) about which they have been learning from environmental support institutes and chemical suppliers (Section 6.2). Particularly, this study has highlighted the value of 'proto-institutional' role (Lawrence et al., 2002; Zietsma and McKnight, 2009; Gómez and Atun, 2013) performed by environmental support organisations for stimulating environmental values amongst SME owner-managers and their employees, while also raising their level of 'eco-literacy' skills (Tilley, 2000) and enabling them to adopt cleaner production practices proactively. In this developing economy, proto-institutional forces through generating normative isomorphic

pressures for SMEs to behave environmentally responsibly have to an extent compensated for lacked coercive isomorphic pressures that *local* regulatory authorities could have exerted in the absence of internal capacity constraints. It is however noteworthy that proto-institutional actors did not aim at challenging, disrupting or reconstructing the existing institutional structure of the country (Zietsma and McKnight, 2009), but rather complemented it in establishing its effectiveness by driving SMEs to comply with environmental regulations.

In other developing countries where SMEs are facing grave environmental challenges and lack support from their national governments to address these issues, there are lessons for them in this study. Drawing on the experience from Pakistan's leather industry, they can benefit from environmental collaborations (Wassmer et al., 2014; Hofmann et al., 2012) by taking joint problem solving environmental initiatives seeking support from international donors, intermediary organisations and other institutional actors, such as input suppliers, and can effectively reduce their environmental footprints through such boundary spanning environmental measures.

#### **8.3.4 Practical contribution**

Findings of this study also carry value for practice. Environmental support institutes, CPC and CPI, building on their previous experience of stimulating the environmental values amongst SME owner-managers, making them aware of the financial advantages attached with environmental improvement, and thus driving them to adopt environmental practice proactively can better support environmentally distanced SMEs. Knowing that these firms are entangled in economic constraints which limit their environmental engagement, these institutes can make them realise, through raising 'eco-literacy' (Tilley, 2000) amongst their



owner-managers and employees, that by adopting even simpler cleaner production measures, such as controlling the input intensity of processes, they can start increasing profitability alongside reducing their environmental footprints. Drawing on their databases, these institutes can also establish ties between environmentally engaged and environmentally distanced SMEs, as they have been doing previously, providing the latter with a useful platform to observe cleaner production processes and learn how to adopt these. This can be helpful in institutionalising cleaner production (van Berkel, 2007) more effectively at a larger scale and advancing 'field cohesion' (Bansal and Roth, 2000) in the Pakistan leather industry.

SMEs that are lagging in achieving environmental targets, but their owner-managers having realised the socioeconomic and environmental benefits of becoming an environmentally responsible enterprise aspire doing business in an eco-friendly way, can draw on the experiences of their environmentally progressive and moderate peers that know how to develop dynamic capabilities for environmental improvement. Again, CPC and CPI can help establishing such networks between environmentally engaged and lagging SMEs in the light of their rich experience of working with leatherworking firms previously. Environmentally lagging SMEs can thus learn from their peers, for instance, how to advance social capital (Nahapiet and Ghoshal, 1998; Coleman, 1988; Adler and Kwon, 2002) using which they can enter into environmental learning networks (Klewitz and Zeyen, 2010; Battaglia et al., 2010) and receive support, for example, from intermediary organisations and input suppliers about how to build absorptive capacity (Cohen and Levinthal, 1990; Zahra and George, 2002; Lewin et al., 2011) and internalise ecological knowledge.

International donors can clearly see that, in the absence of sufficient support from the national government, SMEs in this industry sector still expect technical and informational support from institutes like CPC and CPI (Section 7.3.4). Thus, NGOs or other international sponsors seeking to advance sustainability practices in SMEs can collaborate with CPC and CPI and provide them financial resources needed for extending a helpful hand to leatherworking firms enabling them to achieve their sustainability objectives.

The environmental investments made by international sponsors in the Pakistan leather industry have produced very encouraging results as a number of SMEs have been successful in reducing their environmental footprints. There is hence sufficient evidence available for the national government to observe the positive outcomes of investing in the environmental improvement of the leather industry. The benefits range from protecting the wider natural environment to increased foreign exchange earnings through exporting leather to environmentally sensitive markets like the European countries. The concerned ministries, such as the Ministry of Environment, Ministry of Industries and Production, and Ministry of Commerce, can, therefore, mobilise the parliamentarians for seeking additional budget to spend on the environmental capacity building of leatherworking SMEs.

#### **8.4 Limitations of the study**

While this study offers important insights about environmental drivers (Chapter 5), enablers (Chapter 6) and barriers (Chapter 7) in SMEs of Pakistan's leather industry and fills some important research gaps (Section 2.5) in the greening business literature, it has some limitations.

First, the study has adopted a qualitative methodological approach. While this is a recommended approach for a study like this which examines a novel research context (Dyer and Wilkins, 1991; Eisenhardt, 1989), unlike the results of a survey based study that can be generalised, findings of this research might not be regarded as generalisable. Nevertheless, the study offers some theoretical generalisations. For example, it finds dynamic capabilities for environmental improvement: (a) ecological learning capability, (b) capability for seizing environmental opportunities and (c) enterprise reconfiguration capability. Environmentally proactive SMEs in other industry and country contexts may also display these capabilities. Similarly, the proto-institutional (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) role of intermediary organisations to compensate for the lack of support from formal institutional mechanisms and institutionalising cleaner production practices is another generalisable theoretical phenomenon. This phenomenon can be present or may emerge in countries having somewhat similar institutional structures to Pakistan. These theoretical generalisations hence meet the quality parameters of 'transferability' and 'dependability' i.e. they can be applicable in other contexts at different times (Lincoln and Guba, 1985). Findings which underpin these generalisable concepts also meet the parameters of 'credibility' and 'confirmability' (Lincoln and Guba, 1985) i.e. they are believable and have been reached without the researcher's values intruding the experiences and responses of study participants. To this end, the study draws on triangulated evidence (Section 3.3.4). In addition to SME owners and managers, a number of representatives of other industry stakeholders including industry associations, environmental support institutes, chemical suppliers, and research and educational institutes were also interviewed (Section 3.3.2). At the same time, the researcher also recorded field observations in his 'fieldwork journal' (Hammersley and Atkinson, 2007, p.

151) and took snaps to inform the analysis. The credibility of findings has been further enhanced through developing 'data structures' for themes (Gioia et al., 2013). Conformance to these quality parameters of qualitative research confirms that the theoretical concepts drawn from this research are valid, reliable and generalisable (Easterby-Smith et al., 2008, p. 109).

Second, the study is region specific and does not cover every province of Pakistan. Sample firms were from Punjab and Sindh provinces. These two provinces house the largest number of leatherworking SMEs and represent Pakistan's leather industry well. However, tanneries are also operating in Khyber Pakhtunkhwa (KPK), formerly known as NWFP, and Baluchistan provinces (Section 1.5). Due to time and budget constraints and, particularly because of the less reliable security environment in these provinces, the researcher could not access SMEs in other provinces. If the security situation in the country improves, future research can focus on these two regions also. These regions may bring new insights possibly because active support of environmental support institutes as has been observed in Punjab and Sindh is lacking there (Section 1.5). So, an investigation about how leatherworking SMEs in other two provinces of Pakistan address their environmental issues can be a fascinating area for future research.

Third, the study does not present a comparative analysis of industry sectors. The insights it provides about environmental behaviour of leatherworking SMEs may not be regarded conclusive for firms of similar size in other industry sectors of Pakistan. Examining environmental behaviour of SMEs in other sectors, such as textile which has considerable export concerns as well as environmental issues, has been identified as an opportunity for future studies (Section 8.5).

Fourth, findings of this study refer to considerable environmental pressures coming from international markets. However, this conclusion is based on the responses of owner-managers and other stakeholders of the leather industry from within Pakistan. Thus, perceptions of international buyers remain under-explored. Future research can therefore also consider interviewing international buyers, for example, from the European region while examining the environmental behaviour of SMEs in Pakistan's leather industry.

## **8.5 Future research**

Building on its findings, this study makes some suggestions for future research.

First, since dynamic capabilities evolve over time (Dixon et al., 2013; Helfat and Peteraf, 2009; Teece, 2007), future studies can adopt a longitudinal research design to examine the emergence of environmental capabilities in leatherworking SMEs along their developmental paths. Such a study design can be helpful in understanding where the SMEs have been and where they are going while achieving their sustainability targets, particularly when the nature of business environment of Pakistan's leather industry is dynamic and is largely influenced by international events such as ever-increasing environmental regulations for firms to comply with for operating in international markets. Moreover, given that the contextual settings of Pakistan's leather industry are also changing due to some national level events, such as the development of Sialkot Tannery Zone in Punjab province (Section 1.5.3), a study investigating how the new environmental facilities are influencing the environmental capabilities of SMEs in that particular region can be a valuable contribution to literature.

Second, future research can also investigate multiple industry sectors in Pakistan. Particularity, from the perspective of institutional theory, it would be interesting to analyse if intermediary organisations attached with other industry sectors have also performed a proto-institutional role (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) in supporting SMEs to adopt cleaner production. It will also be valuable to examine if SMEs in other economically vibrant but environmentally harmful industry sectors, such as textile industry, have also developed dynamic capabilities for environmental improvement and that the microfoundations of those capabilities are different from the ones identified in the case of leather industry.

Third, multi-county studies can be another avenue for future research. Such studies can compare and contrast the dynamics of cluster level environmental innovations in developed and developing economies. For example, a possible research project can be, exploring the dynamics of cluster level environmental innovations for reducing environmental footprints of leatherworking SMEs: a comparative study of Pakistan, India, Egypt and Italy. Such studies can bring useful insights for public policy managers and international donors who look forward to take the cluster based environmental initiatives for supporting SMEs with lower absorptive capacity (Lewin et al., 2011; Zahra and George, 2002; Cohen and Levinthal, 1990) to adopt environmental practices.

## **8.6 Recommendations from the study**

At several points, this study has made recommendations for environmental improvement of leatherworking SMEs. This section offers a set of key recommendations which can be helpful for public policy managers, intermediary organisations, international donors and owner-managers for improving the environmental performance of SMEs in the Pakistan

leather industry. It is hoped that these recommendations if operationalised can help leatherworking SMEs ensure their survival in international supply chains and enable them to achieve the tripartite benefits (economic, environmental and social) simultaneously.

First, Pakistan's economy is characterised by considerable institutional 'gaps' (Littlewood and Holt, 2015b; Kolk, 2014) as far as the support for and control over environmental engagement of SMEs is concerned, and it undermines the effective enforcement of environmental regulations offering an easy escape from penalties to environmentally non-compliant leatherworking SMEs (Section 7.3.1). The National government can allocate the needed resources for the capacity building of environmental inspectors who are considered under-trained to perform their jobs. At the same time, a reasonable increase in the salaries of environmental inspectors and other staff monitoring the issues of pollution in leather industry is vital so that they do not fall prey to unfair earnings limiting them from performing their duties honestly. Only then it is possible that environmental behaviour of leatherworking SMEs is monitored effectively. Given the fact that non-regulatory drivers such as sustainability-values of owner-managers and motivational campaigns of environmental support institutes have been influential in developing pro-environmental behaviour amongst SMEs (Section 5.3), effective enforcement of regulations can further speed up the process to achieve sustainability targets in the leather industry. Implementing recommended measures require sufficient resources. These can be arranged through mobilising political will in the country. This can be achieved through starting a discourse in the national assembly making the parliamentarians realise that if funds are not directed towards environmental improvement of the leather industry, the contribution of this economically vibrant sector to national export earnings can decline. There are successful examples of mobilising politicians for socio-economic causes in the country. For example,

in order to achieve the Millennium Development Goals (MDGs) by reducing chronic poverty, a bill was passed to start supporting marginalised families in the country through Benazir Income Support Programme (BISP). It is since 2008 that the programme is running successfully. Thus, through political will resources for addressing environmental issues in the country can also be generated.

Second, in areas where combined effluent treatment plants are operational, some SMEs are seen to have been cheating by draining their wastewater through those channels that do not fall in lagoons of these treatment plants. While such actions of firms save them money (they do not pay or pay lesser charges for wastewater treatment), contaminated wastewater discharged through unauthorised channels adds to pollution which is harmful to the wider natural environment. Thus, there is a need for better governance of cluster level pollution controlling arrangements (de Oliveira and Jabbour, 2015). Possibly, institutions at the local level can be strengthened for achieving this. For example, management of effluent treatment plants, who do not have enough human resources, can collaborate with district governments and by seeking support from their staff can start strict surveillance of environmentally non-compliant SMEs. This can improve governance mechanisms of existing leather clusters. In this, there is also a lesson for those tannery clusters that are in their developing phase, such as Sialkot Tannery Zone. They can ensure that better governance systems are institutionalised right from the outset so that the set environmental targets are achieved effectively.

Third, compared to end-of-pipe treatment technologies, such as wastewater treatment plant, which are too expensive for the majority of leatherworking SMEs to buy, a number of cleaner production initiatives, like control of input intensity of processes and installation



of dust and solid waste collectors, are less capital intensive measures, and many firms have started to adopt these. There is hence a considerable scope to control tanneries' pollution through institutionalising cleaner production, as a respondent from CPI also asserted: *'They are least interested in doing end-of-pipe treatment because that is a very capital-intensive process. However, they show interest in adopting cleaner production'* (Programme manager, CPI). While leatherworking SMEs are not seen to have generally been facing considerable informational barriers because intermediary organisations and input suppliers have been sharing with them the latest ecological knowledge (for example, Section 6.2), much needs to be done to disseminate environmental education amongst environmentally distanced SMEs for making them realise the economic, environmental and social benefits attached to cleaner production. Since a number of SMEs in Pakistan's leather industry are still in the initial phases of adopting cleaner production (Ortolano et al., 2014), continuous adoption of these practices requires a motivational push and informational support. This calls for consistent support from intermediary organisations. Industry associations in collaboration with environmental support institutes, multilateral donors, Ministry of Environment, Ministry of Industries and Production and Trade Development Authority of Pakistan (TDAP) can perform these functions efficiently.

At the same time, lack of environmentally literate labour-force is one of the major challenges to the adoption of cleaner production in SMEs (Sections 4.2.3 and 7.2.2). This is an area where government departments working under Ministry of Environment and Ministry of Industries and Production, such as Small and Medium Enterprises Development Authority (SMEDA), can collaborate with industry associations, environment support institutes and industry related educational institutes to start training labour. There is also a need to develop the culture of permanent employment in the industry so that SME

owner-manager also actively support environmental training of their workers (Section 7.2.2).

Fourth, lack of social accountability is also one of the barriers limiting environmental improvement in SMEs (Section 7.3.3). There is hence a need to raise environmental awareness amongst general public so that they can hold leatherworking SMEs accountable for their environmentally irresponsible practices. In this regard, the government can make an effective use of media campaign such as advertising on TV and making announcements on radio channels, in addition to using billboards across the roads to disseminate information about harmful effects of pollution generated by leather industry. Recently, such advertising campaigns have been useful in bringing behavioural changes amongst communities in the country. For example, people were made aware of dengue fever, and the majority of them took protection measures. Media campaigns as recommended can, therefore, raise social and environmental responsibility in leatherworking firms by pushing them to take initiatives for protecting the wider natural environment.

Fifth, underdeveloped infrastructure is a considerable environmental barrier for SMEs (Section 7.3.2). Thus, there is a scope for district governments, management of effluent treatment plants, industry associations, and SMEs to collaborate and raise the needed financial resources to develop infrastructure such as channels to drain wastewater. Government should ensure a consistent supply of utilities, such as gas and power, to SMEs so that they can undertake their economic activities because only if they are progressing financially, they can then progress environmentally. Also, there is a need to develop the local chemicals industry which should start producing less harmful inputs according to international standards. This can be useful for SMEs to establish responsible supply chains

within the domestic economy and also save transaction costs by not buying or at least buying less from international markets.

Finally, limited financial resources are also seen as a critical barrier to environmental improvement, particularly for buying advanced cleaner technologies (Section 7.2.1). There is a business opportunity for financial institutions. They can extend loans to SMEs for buying cleaner technologies and play an important role in enabling these firms to overcome barriers to environmental improvement. However, given the cultural and religious values of the larger community in Pakistan, generally, SME owner-managers avoid borrowing from conventional banks which charge interest because paying interest is not permitted in Islam. While Islamic banking is already progressing in the country, conventional banks can introduce 'sharia' compliant loaning facilities and fulfil this need in the market. Moreover, the financial challenges of leatherworking SMEs also need attention from the central bank and national government who, through policy interventions, can direct financial institutions to extend such loaning facilities on relatively less strict terms.

## **8.7 Final reflections on the study**

This study has demonstrated that SMEs in Pakistan's leather industry display different patterns of environmental behaviour, based on which they can be classified as environmentally progressive, moderate and distanced firms (Chapter 4). Compared to environmentally distanced SMEs, which do not take measures to reduce their environmental footprints, firms in the other two categories proactively adopt environmental practices. Multilevel factors (micro-meso-macro) drive environmentally progressive and moderate SMEs to behave environmentally responsibly (Chapter 5). Operating in conjunction, for example, macro and meso level factors, such as foreign

buyers, international regulations, environment support institutes and peers, exert coercive, normative and mimetic isomorphic pressures (DiMaggio and Powell, 1983) on these firms to adopt environmental practices. In response, these firms draw on their environmental capabilities (Chapter 6) which enable them to reduce their environmental footprints and exploit environmental opportunities. Nevertheless, certain factors such as limited financial resources, underdeveloped human resources, poor infrastructure and institutional 'gaps' (Littlewood and Holt, 2015b, Kolk, 2014) are seen as barriers to further environmental improvement in these firms (Chapter 7). Addressing these barriers requires the considerable attention of the public policy managers and other local and international actors seeking to support SMEs for reducing their environmental footprints.

Particularly, the study has identified the key role that (informal) compensatory institutional structures (Kolk, 2014) and 'proto-institutional' actors (Gómez and Atun, 2013; Zietsma and McKnight, 2009; Lawrence et al., 2002) have performed in the absence of effective formal institutional mechanisms, for both driving and enabling SMEs to become environmentally responsible enterprises. It has also demonstrated that holistic understanding of the environmental transformation of SMEs requires the development and operationalisation of a hybrid theoretical framework, which in this research is underpinned by institutional theory, resource-based view of the firm (RBV), natural resource-based view (NRBV) and dynamic capabilities perspective. This framework has allowed the researcher to effectively examine the receptivity of firm level factors to changes in the external environment and also their interactive effect on the environmental behaviour of the firm. This study thus proposes for future research to use hybrid theoretical frameworks for developing better and holistic understanding of the environmental behaviour of SMEs.

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# Appendices

## Appendix-I: Resources and capabilities of firms

Firms own different sets of resources and capabilities. Broadly, these resources and capabilities can be understood as assets and competencies that can capacitate or enable the firms to perform different business operations. On the other hand, absence of these resources and capabilities can limit firms' ability to perform certain functions. Considering their characteristics and functionalities, resources and capabilities are distinguished from each other.

### Resources

Every firm owns resources. The resources refer to a stock of factor inputs (Amit and Schoemaker, 1993), the use of which is controlled (completely or partially) by the firms in order to achieve various business objectives such as the production of goods and/or services. Wernerfelt (1984) explained that a resource is 'anything which could be thought of as a strength or weakness of a given firm' (p. 172). According to Barney (1991), resources include all the 'assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness' (p. 101). This is a wider definition and even considers capabilities as resources for the firms.

Helfat and Peteraf (2003) add that a resource is 'an asset or input to production (tangible or intangible) that an organization owns, controls, or has access to on a semi-permanent basis' (p. 999). This definition extends the viewpoint about resources in that it is not compulsory for resources to reside within the firms or be under their direct control, these can exist externally and made available to firms under certain arrangements with the external partners. These external partners can include, but may not be limited to, firms, public sector organisations or international support agencies.

In the economics literature, resources are described as the factors of production (land, labour, capital and entrepreneur/organisation). According to neo-classical microeconomics, firms can acquire resources from the factor markets (Barney, 2001b). It implicates that resources can be transferred from one firm to another (Makadok, 2001). So, even if a firm is dissolved some of its resources will continue to exist because ownership

of resources will be transferred to a new owner (Makadok, 2001). On the other hand, the evolutionary economics considers that the resources which are developed over time they become firm specific (Barney, 2001b). The firm specificity of resources will limit their mobility. Therefore, it becomes difficult for some resources to either exchange or completely transfer among different firms.

The resources serve as microfoundations (Teece, 2007) upon which the productive capacity of a firm is based. Different resources perform different tasks. Considering their heterogeneous attributes, resources are classified in different categories. For instance, in her seminal work Penrose (1959) classified the firms' resources into two categories: physical resources and human resources. The physical resources can include a firm's plant, tools and equipment, land, natural resources, raw materials, semi-finished goods, waste products and by-products, and even the unsold stocks of finished goods. On the other hand, human resources may consist of unskilled and skilled labour, clerical staff, administrative teams, financial managers, legal advisors, technical people and managerial staff.

Some researchers have extended this classification. For example, Grant (1991) presents six categories of resources. These are physical resources, human resources, economic or financial resources, technological resources, reputational resources and organisational resources. Similarly, Barney (1991) classifies resources in three forms of capital: physical capital, human capital and organisational capital. The physical capital comprises of the 'physical technology used in a firm, a firm's plant and equipment, its geographic location, and its access to raw materials' (Barney, 1991, p. 101). The human capital represents the 'training, experience, judgment, intelligence, relationships, and insight of *individual* managers and workers in a firm' (Barney, 1991, p. 101). Finally, the organisational capital includes 'a firm's formal reporting structure, its formal and informal planning, controlling, and coordinating systems, as well as informal relations among groups within a firm and between a firm and those in its environment' (Barney, 1991, p. 101).

Other researchers categorise resources as tangible and intangible (e.g. Collis and Montgomery, 1995; Hall, 1992; Zahra and Das, 1993). Tangible resources can include physical resources, financial resources and human resources. On the other hand, intangible resources may comprise of know-how of doing things, reputation of a firm and licences and patents held by an organisation.

Finally, it is important to appreciate that just ownership of resources cannot benefit the firms. Barney (1991), for instance, argues that firms cannot become competitive unless they use their resources efficiently. Similarly, Penrose (1959) argues that paramount are the services that resources can render and not the existence of resources themselves. She explains that for administering physical resources, human resources are needed. Thus, the productive services of resources would be a result of an interaction between the physical and human resources. It implicates that, in order to conceive the market opportunities and to exploit them, firms need to use resources but for that certain capabilities are needed.

### **Capabilities**

Capabilities can be understood as an ability of the firms to use owned resources. The primary function of capabilities is to deploy resources in different combinations through organisational processes in order to achieve the set targets (Amit and Schoemaker, 1993). Helfat and Peteraf (2003) assert that capabilities do not only perform a coordinated set of activities, these also aim at 'achieving a particular end result' (p. 999).

Unlike resources, capabilities cannot be traded in the factor market. The reason is that capabilities are built over time through the complex interaction of resources (Ambrosini et al., 2009; Sirmon et al., 2007; Makadok, 2001; Teece et al., 1997). The embeddedness of capabilities within the complex routines and processes of firms makes them firm-specific. As a result, if a firm ceases to exist its capabilities also decrease.

Every activity of the firm cannot be regarded as its capability. For an activity to be considered a capability, the activity must become a routine or at least achieve some threshold level of practice (Helfat and Peteraf, 2003). Winter (2000), for instance, describes that 'an organizational capability is a high-level routine (or collection of routines)' (p. 983). It implies that a capability 'permits repeated, reliable performance of an activity' (Helfat and Peteraf, 2003), for example, the ability to produce and sell a set of goods.

A major role of capabilities is to enhance the productivity of firms' resources (Makadok, 2001). Through resources, capabilities can exert an impact on the performance of firms. This indirect impact of capabilities on the firms' performance indicates that capabilities will become meaningless in the absence of resources.



Different capabilities play different roles. Therefore, all the capabilities of a firm cannot be regarded equal or similar<sup>22</sup>. Dosi et al. (2008), for instance, draw a distinction between technological and organisational capabilities. The technological capabilities deal with physical elements of organisational resources. On the other hand, organisational capabilities look into human relationships and refer to capabilities of coordination and social interaction within and outside the firm. Nevertheless, the technological and organisational capabilities do not operate in isolation. For example, technological capabilities cannot be put to work without some organisational arrangements. It is possible that similar technological capabilities reside in different firms. However, considering the contextual differences and diverse patterns of the historical development of organisations, it is less likely to trace homogenous organisational capabilities across firms.

In the literature, capabilities are also described to be non-static in nature and are assumed to follow lifecycles. Helfat and Peteraf (2003), for instance, assert that like products, capabilities also pass through different phases of development. So, once established as routines, capabilities can grow, reach their maturity and then can face a decline. When in the foundation stage of their lifecycle, emergence of capabilities entails the deployment of an organised team having specific objective(s) to achieve. However, the skills of team members need to be blended with some complementary resources such as technology in order to execute an activity in pursuit of a common goal. Once founded successfully, capabilities pursue their path of development. In the development stage, experience becomes a source of learning and refinement for the team members. As a result, team members start evaluating the alternatives and try to choose the best possible one. Thus, through experience capabilities develop over time. When in the maturity stage, teams try

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<sup>22</sup> Some researchers have even established hierarchies of operating capabilities. For example, Danneels (2002) describes operating capabilities as the 'first-order competences'. These first-order competences are explained as those activities that 'involve the tangible and intangible resources needed for producing a particular product or addressing a certain group of customers' (Danneels, 2002, p. 1112). For operating capabilities, Winter (2003) uses a different term i.e. 'zero level' capabilities. This author explains that, over time, 'zero level' capabilities enable a firm to keep producing and selling same product at the same scale to serve same customers. Winter's (2003) 'zero level' capabilities are substantive capabilities (or ordinary capabilities) for Zahra et al. (2006). In the words of Zahra et al. (2006), substantive capabilities are 'the set of abilities and resources that go into solving a problem or achieving an outcome' (p. 921). While comparing different typologies of capabilities from previous literatures, Ambrosini et al. (2009) argue that for them Danneels's (2002) 'first order' capabilities, Winter's (2003) 'zero level' capabilities and Zahra et al.'s (2006) 'substantive' capabilities are the 'resource base' of a firm, which allow the firms to carry out core business functions. In summary, the role of capabilities is to enable a firm to perform regular business activities without altering the features of a product or service, sales mechanism and the target customers.

to maintain the capabilities by exercising them regularly. So, with consistent practice, capabilities become firm-specific and get embedded in the firms. However, in the maturity stage capabilities may be threatened by some internal and external forces like changes in the preference of managers to use developed capabilities, new consumers' demands, scientific and technological changes, and access to raw material or change in regulations (Helfat and Peteraf, 2003, p.1004). The results can be diverse. Possible outcomes can include: retirement (firm stops using the capability), retrenchment (reduction in the use of capability), renewal (firms seek new ways of improving the capability), replication (firm might use same capability to produce same product in a new geographical market), redeployment (firm can use same capability but to produce a related product for a new market) and lastly, recombining (using original capability in combination with some other capability or capabilities) (Helfat and Peteraf, 2003, p. 1005-6).

### **Dynamic Capabilities**

Dynamic capabilities enable firms to change their resource base and renew existing capabilities in response to the changes (rapid or moderate) in the environment in which the firms operate (Eisenhardt and Martin, 2000; Teece et al., 1997). Using the dynamic capabilities, firms can realign their operating capabilities to adapt and evolve (Newey and Zahra, 2009).

In their seminal work, Teece et al. (1997) defined dynamic capabilities as 'the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments' (p. 516). In this definition, the term 'dynamic' indicates capacity of a firm 'to renew competences so as to achieve congruence with the changing business environment' (Teece et al., 1997, p. 515). On the other hand, the term 'capabilities' refers to the 'key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competences to match the requirements of a changing environment' (Teece et al., 1997, p.515).

Agreeing with Teece et al. (1997) on the role of dynamic capabilities, Eisenhardt and Martin (2000) describe that the dynamic capabilities are 'organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die' (p. 1107). However, in contrast with Teece et al. (1997), Eisenhardt and Martin

(2000) assert that dynamic capabilities can be effective both in the highly turbulent markets and moderately dynamic or less turbulent markets.

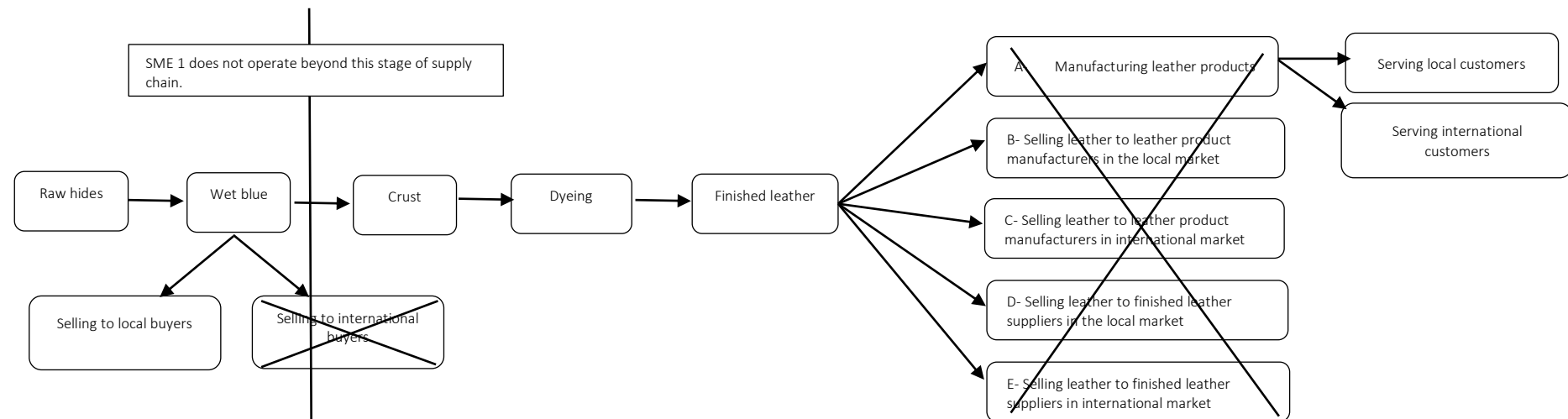
Contributing to the debates on definitional development of dynamic capabilities, Zahra et al. (2006) discuss that dynamic capabilities are the 'abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision-maker(s)' (p. 918). In a later article, Wang and Ahmed (2007) have presented a comprehensive definition of dynamic capabilities i.e. dynamic capabilities refer to 'a firm's behavioural orientation constantly to integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage' (p. 35).

All the definitions of dynamic capabilities have at least one commonality i.e. dynamic capabilities change the substantive/ordinary capabilities of firms over time. According to Ambrosini and Bowman (2009), there are three significant and common features of dynamic capabilities. First, dynamic capabilities change the resource base of a firm. Second, dynamic capabilities cannot be purchased in a market rather are built over time. Third, dynamic capabilities are path dependent and are therefore embedded in firms.

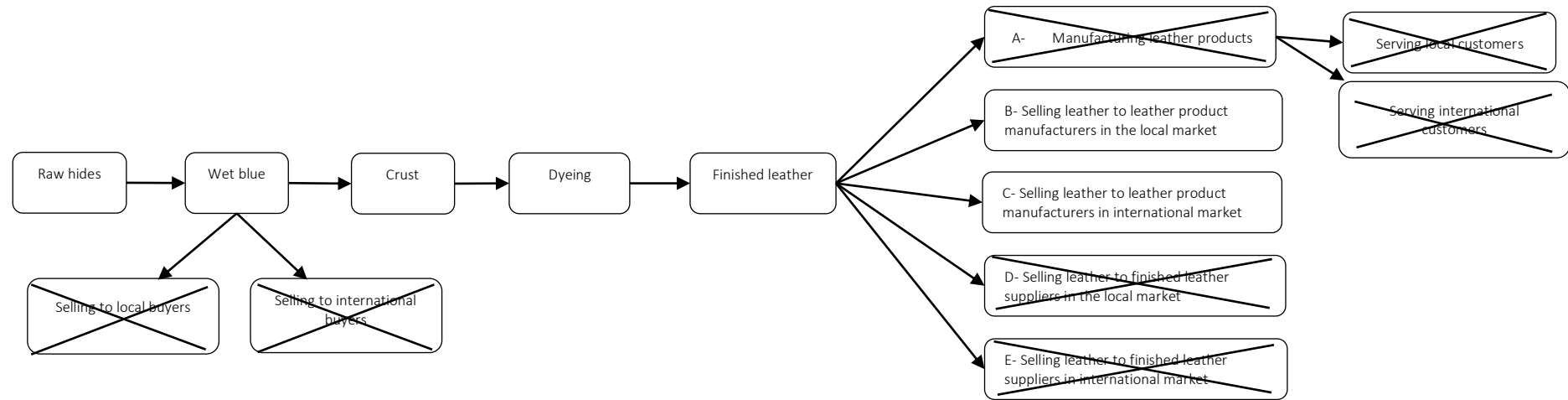
In summary, there are glaring differences between resources, capabilities and dynamic capabilities. However, firm's resources and capabilities when considered in isolation will not make sense to the managers because the use of resources is dependent on capabilities and the renewal of resources and substantive capabilities is possible through an effective use of dynamic capabilities.

## Appendix-II: Supply chain positioning of sample firms

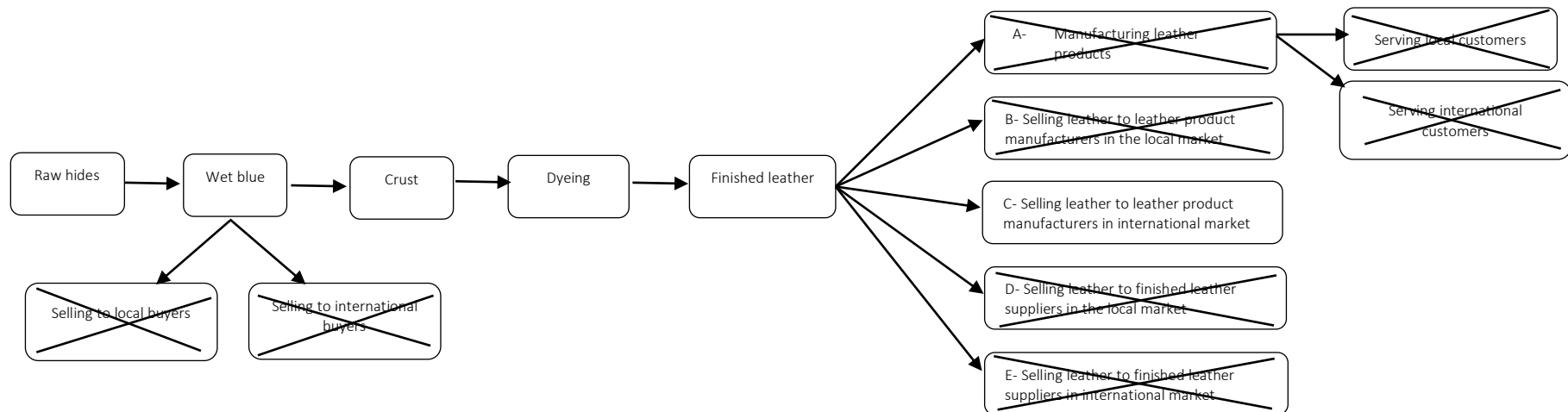
### SME 1 - Environmentally distanced firm



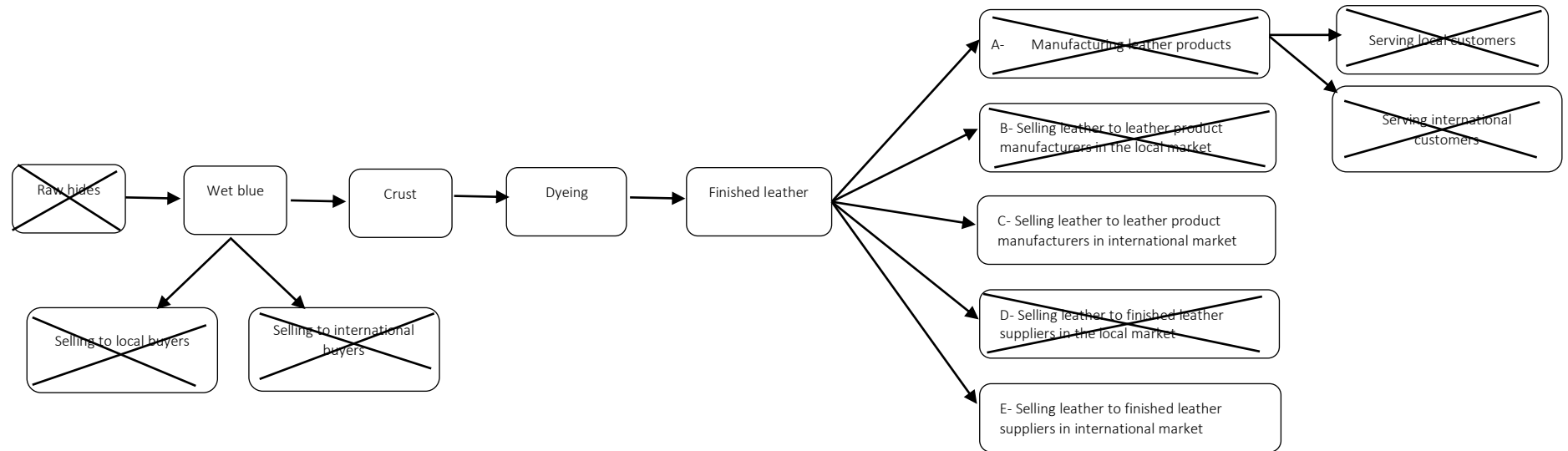
### SME 3 - Environmentally distanced firm



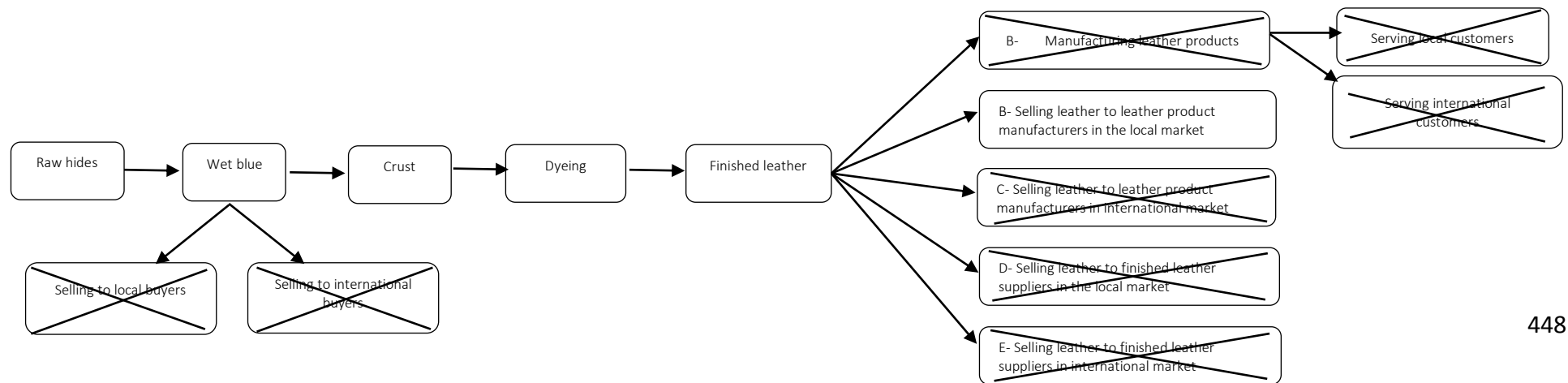
### SME 4 – Environmentally progressive firm



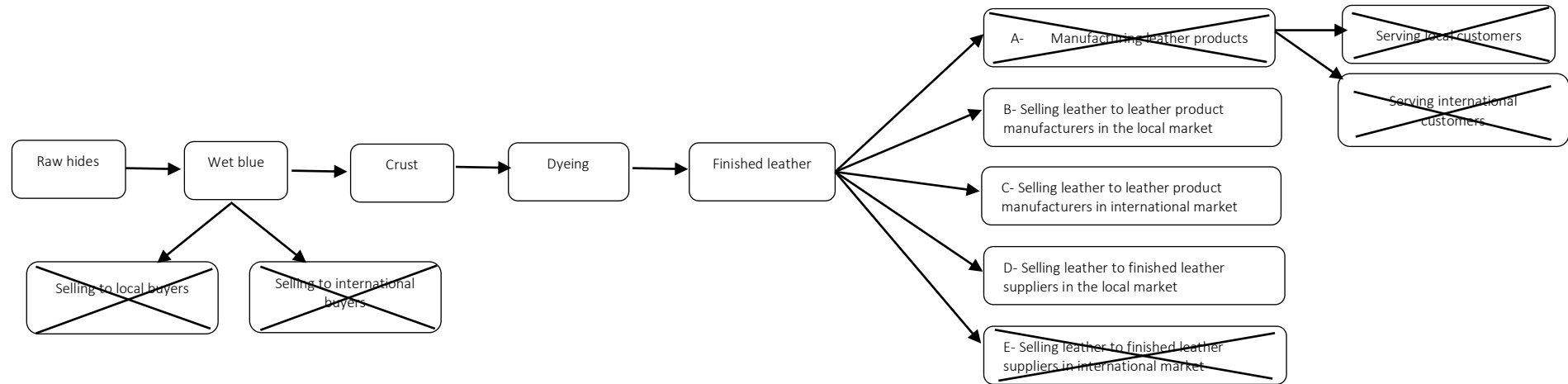
## SME 2 and SME 5 – Environmentally moderate firms



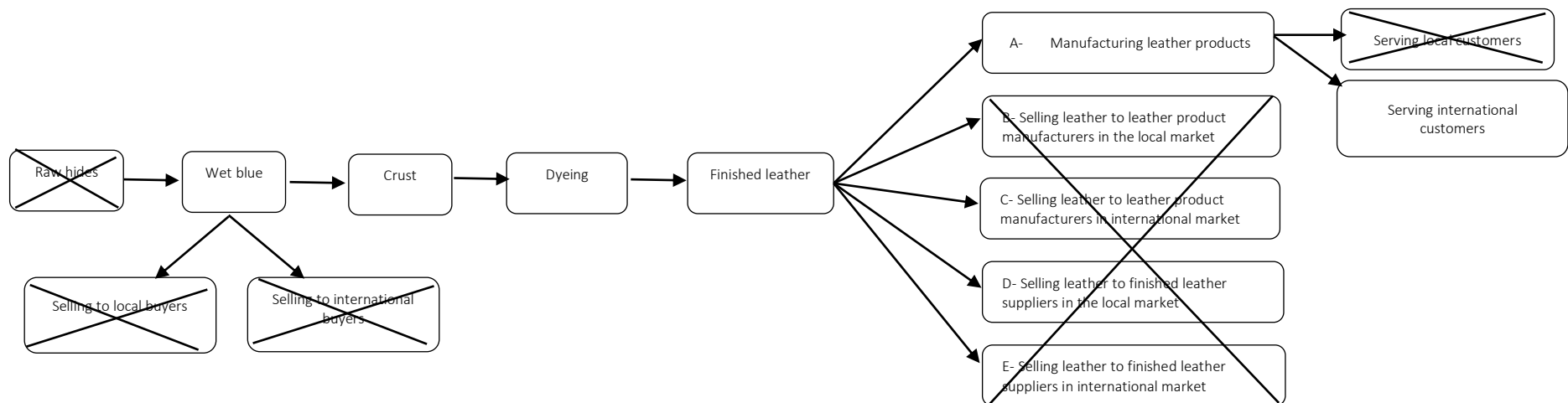
## SME 6 - Environmentally moderate firm



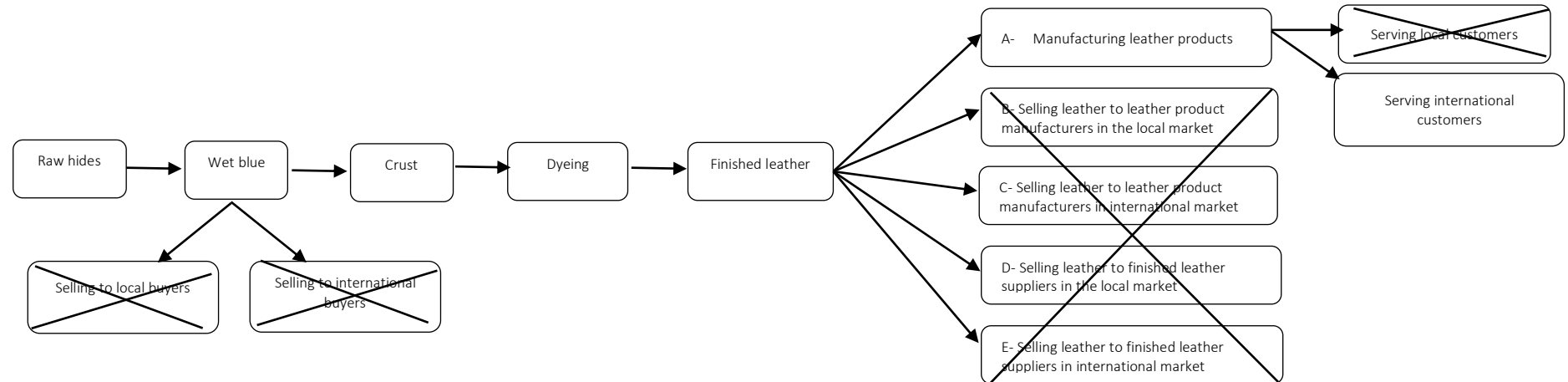
## SME 7 - Environmentally moderate firm



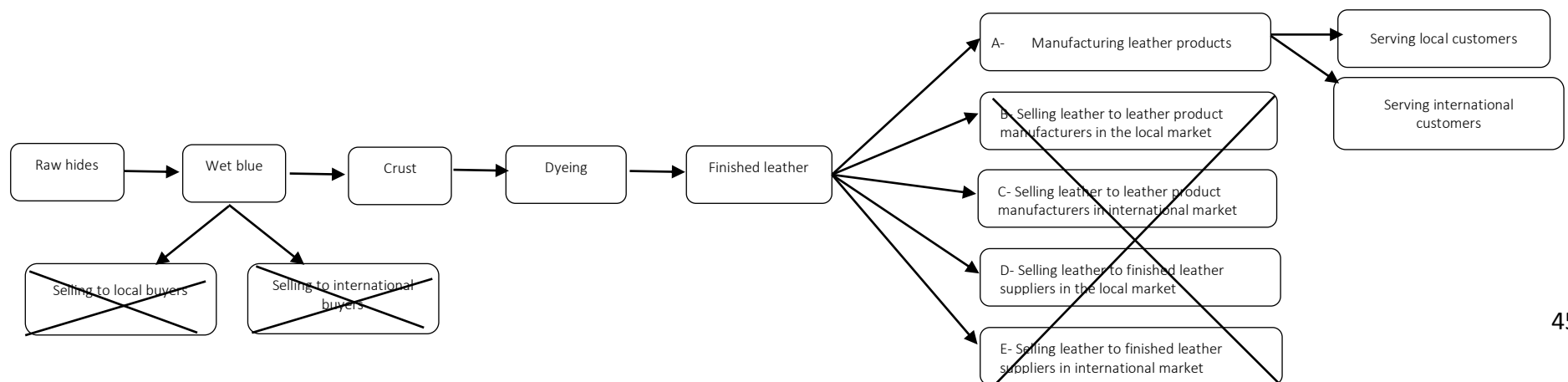
## SME 8 and SME 16 - Environmentally moderate firms



## SME 9 – Environmentally moderate firm and SME 15 – Environmentally progressive firm

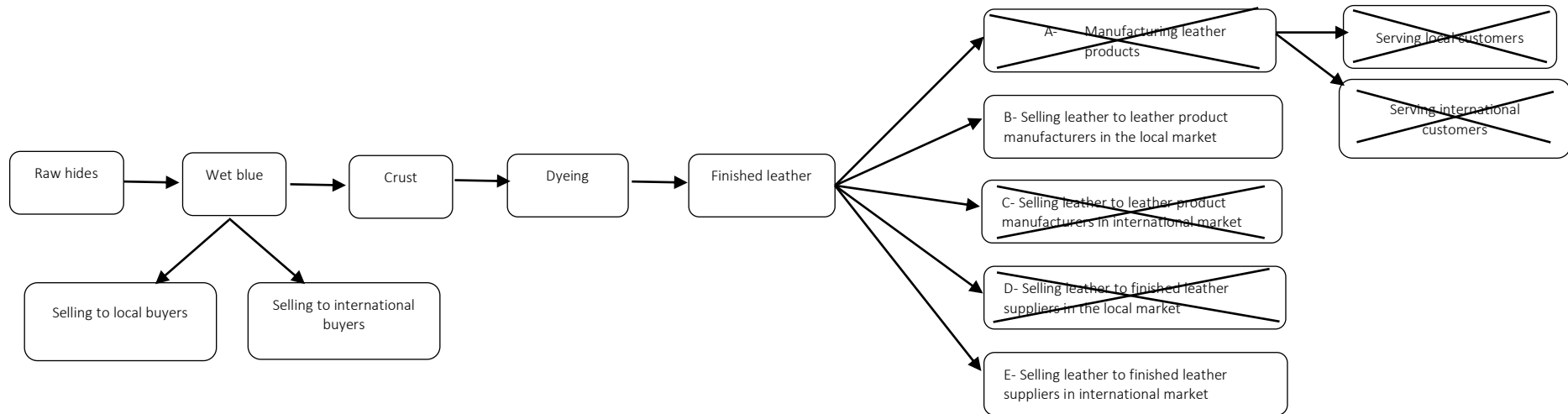


## SME 10 – Environmentally moderate firm and SME 19 – Environmentally progressive firm

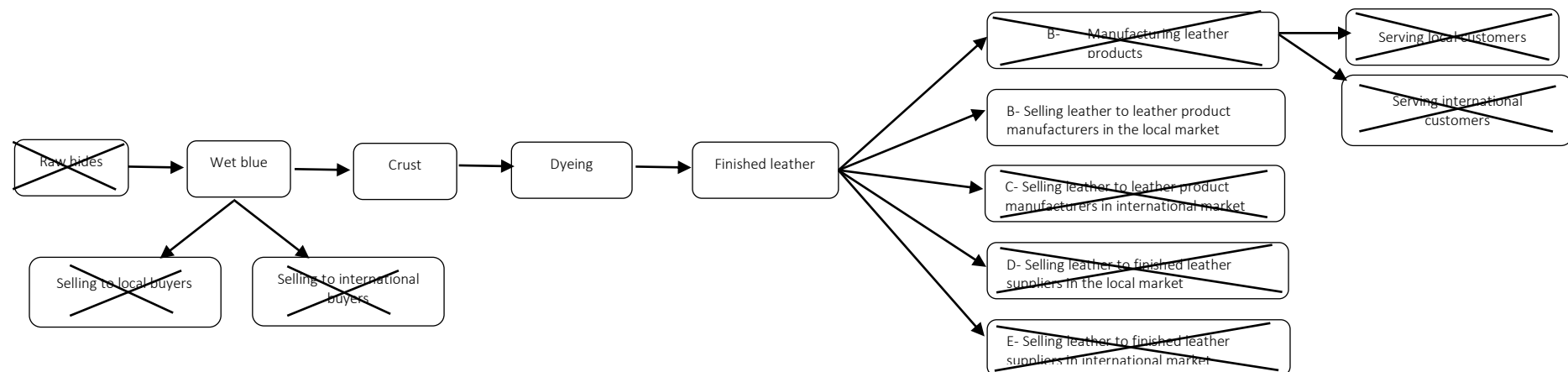




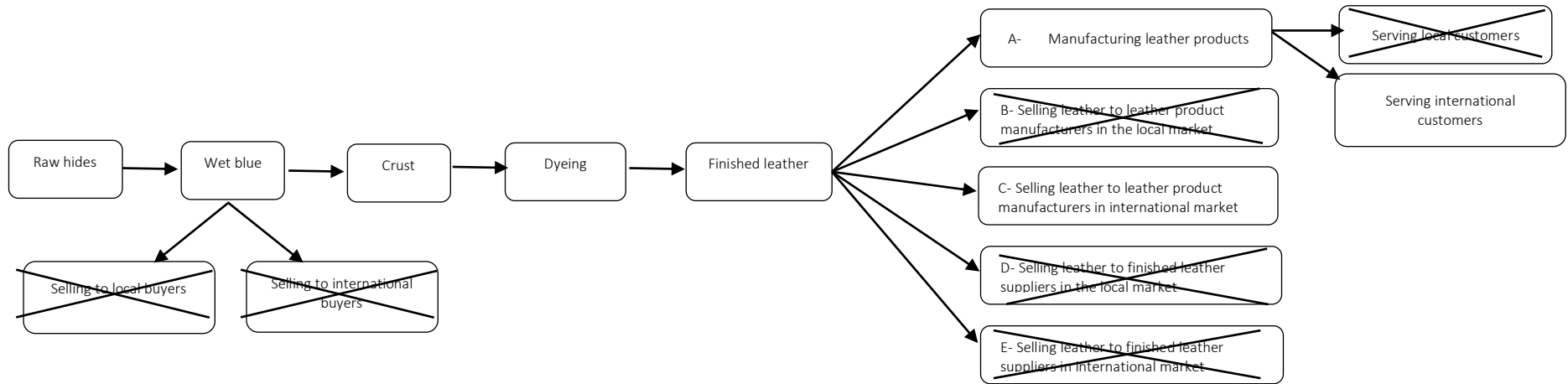
## SME 12 - Environmentally moderate firm and SME 13 – Environmentally progressive firm



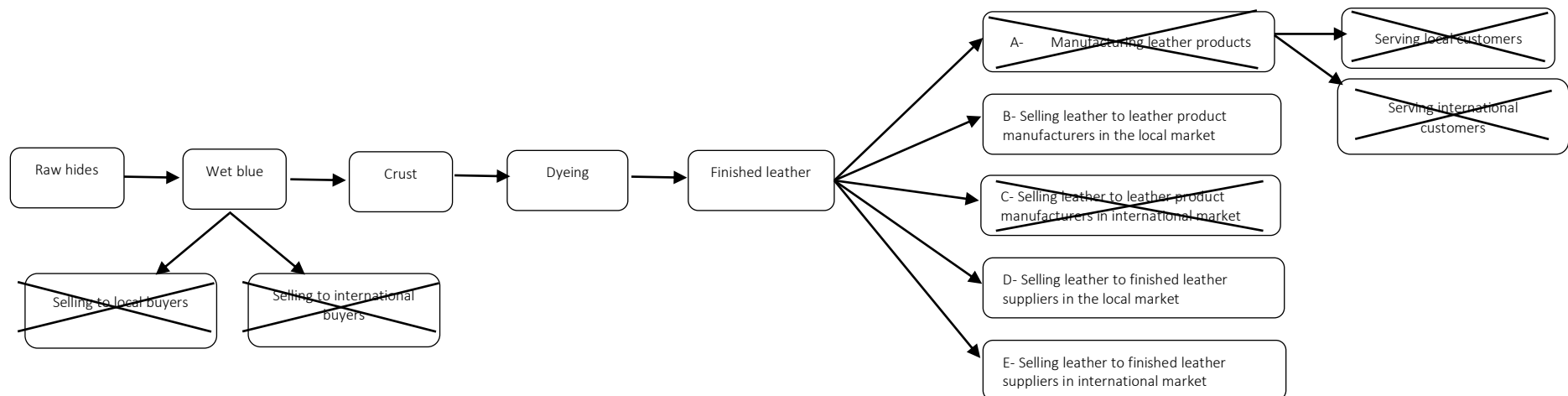
## SME 14 - Environmentally moderate firm



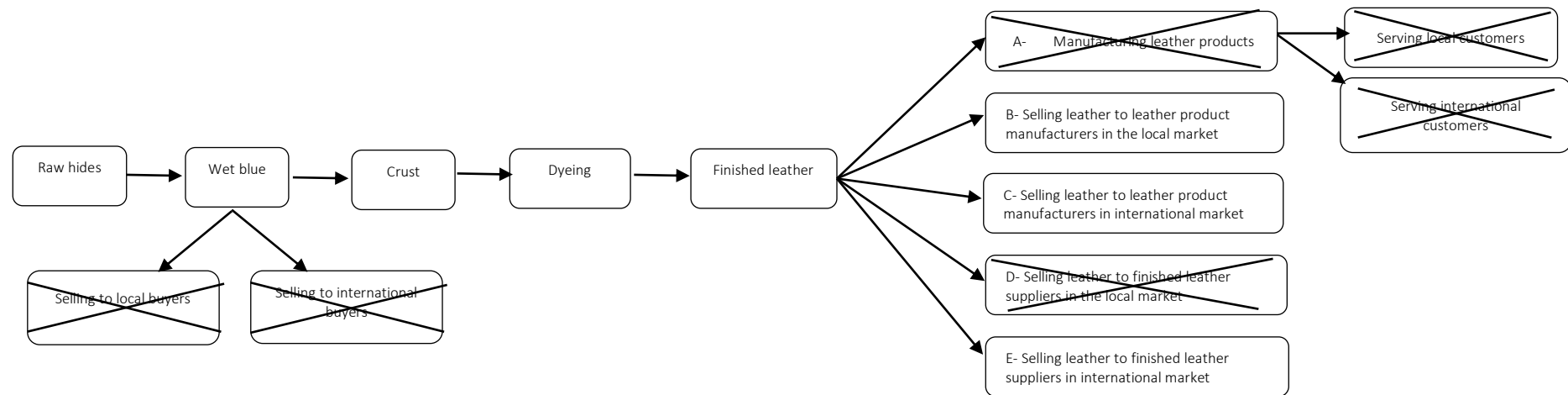
### SME 18 - Environmentally moderate firm



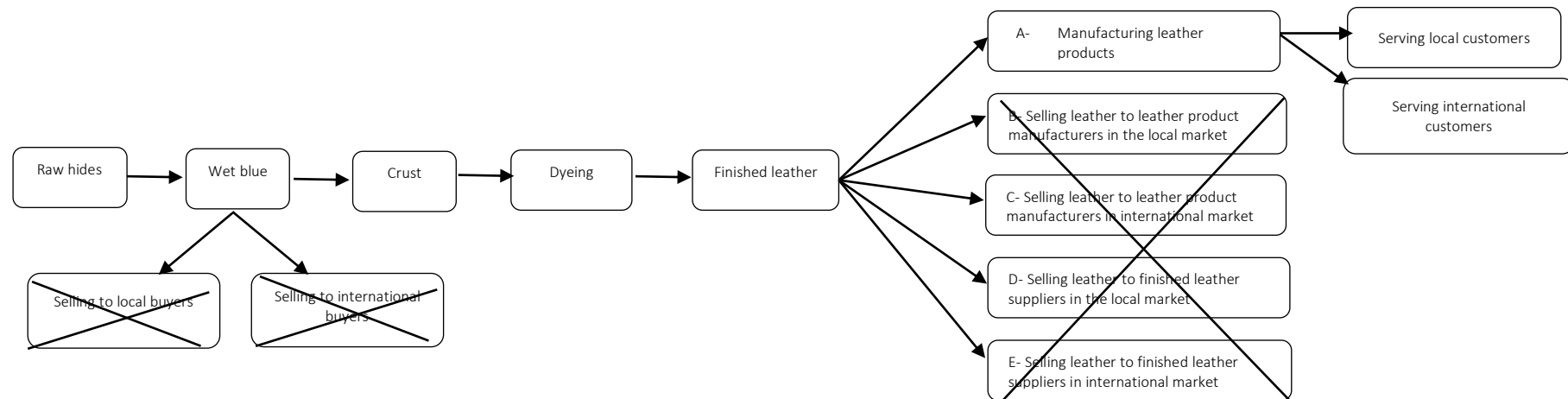
### SME 20 - Environmentally moderate firm



## SME 21 – Environmentally distance firm



## SME 17 - Environmentally moderate firm and SME 22 - Environmentally distanced firm



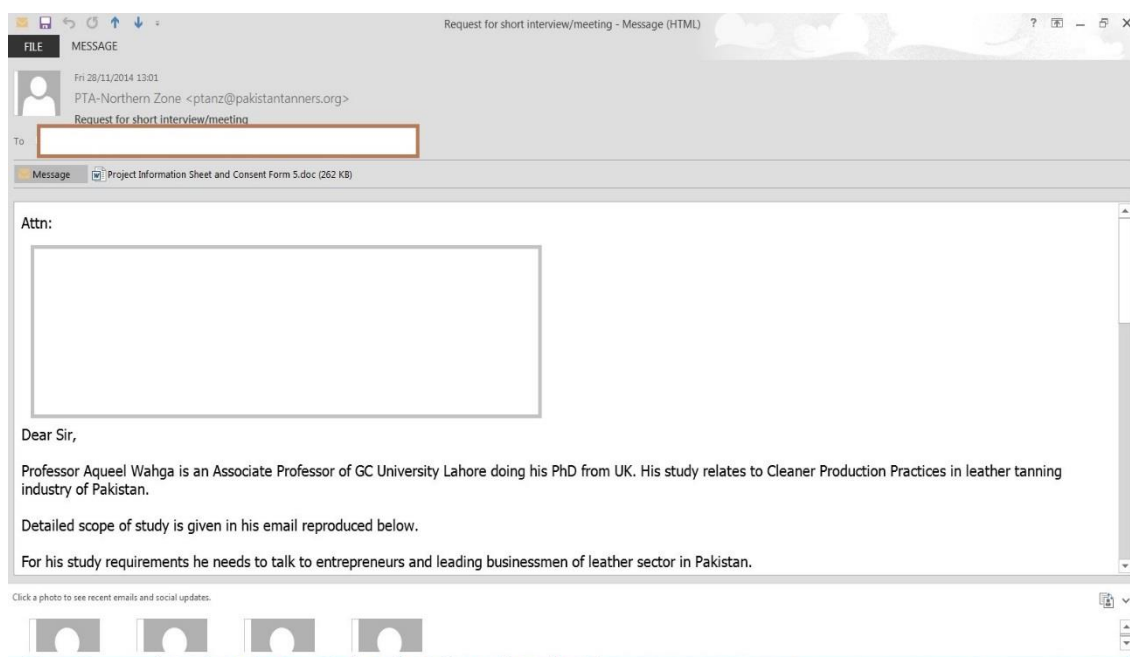
### **Appendix-III: Interview protocol for SMEs**

1. Would you kindly tell me something about the emergence of leather industry in Pakistan?
2. What do you think are the challenges of the leather industry in Pakistan?
3. Specifically, what are the environmental issues of this industry?
4. When did you enter into this industry and why?
5. What are the major challenges for you?
6. What is your understanding of the environmental issues of your firms?
7. Within your firm, what measures are taken to reduce the environmental impacts?
8. If measures are taken, what kinds of resources are needed?
9. What do you think, what makes your firm to accumulate and use these resources effectively?
10. Are you benefiting from any environmental support programme offered by the Government of Pakistan or by some other organisation?
11. If yes, what enabled you to access this support programme?
12. If no, what do you think constrained you from approaching this support programme?
13. Generally, what stops you from taking environmental measures?

#### **Appendix-IV: Interview protocol for institutions/other industry stakeholders**

- 1- Would you kindly tell me about Pakistan's leather industry?
- 2- Would you kindly reflect upon the environmental challenges of Pakistan's leather industry?
- 3- What is the background of your organisation and how you are associated with the leatherworking industry?
- 4- What kind of environmental support your organisation extends to leatherworking SMEs?
- 5- What kind of challenges you face while extending support to them?
- 6- How often you train people by inviting them at some place and how often you visit tanneries for training their human resources?
- 7- How do you establish links with tanneries?
- 8- Who funds your activities?
- 9- Who undertakes capacity building of your staff to educate and train leatherworking firms?
- 10- From your experience of working with different tanneries, would you kindly tell me why some of them are working for environmental improvement and others are not?
- 11- To what extent labour is adaptive to environmental practices in leatherworking firms? I mean, when you train them how happily they learn and adopt new things?
- 12- To what extent your interventions have been effective in promoting environmental practices in leatherworking firms?
- 13- How are you sustaining your supportive role?

## Appendix-V: An illustration of email sent out by PTA in support of recruiting study participants



## Appendix-VI: Project information sheet and consent request document



**The Open University  
Business School, UK**

Walton Hall  
Milton Keynes  
United Kingdom  
MK7 6AA

### Consent to Participate in Research Study

Dear \_\_\_\_\_,

I am carrying out a study to explore environmental practices of Small and Medium Enterprises (SMEs) in emerging economies. My project aims to develop an understanding about how SMEs in leather industry in Pakistan accumulate, develop and use their resources and capabilities to exploit environmentally relevant market opportunities. In doing so, I intend to talk to entrepreneurs of leather industry to identify how they are coping with different environmental challenges. I also seek to talk to local chamber of commerce, local government representatives, members from ministry of environment, and international donor agencies that how they are capacitating local SMEs to curtail their environmental impacts.

The discussion shall be through telephone and/or face-to-face, which would be digitally recorded and later on translated into English language (where needed) with the help of language experts in order to be used for analysis. It is assured that your and your business's identity would be kept anonymous. Some extracts from discussion would be used to inform analysis chapter of dissertation. Moreover, research findings would be publicised through academic articles, seminars and conferences. You are very welcome to read the analysis following our discussion that would be reported in my dissertation. It is assured that discussion information would be kept in password protected devices to ensure that it is not accessible to unauthorised persons.

Participation is voluntary and during discussion, if at any point, you like to stop discussion, do not want to be recorded or do not wish to answer a question, you may do so. It is also assured that no risks are likely to attach to the project. Yet, the project is under strict obligation to protect you from any type of psychological distress or physical risks.

Your valuable contribution to the project is highly appreciated.

Best Regards,

Aqueel Wahga

Contact Number UK: + 44 (0) 7720 204821 / Contact Number Pakistan: +92 (0) 3334589834

Email: [aqueel.wahga@open.ac.uk](mailto:aqueel.wahga@open.ac.uk)

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Of

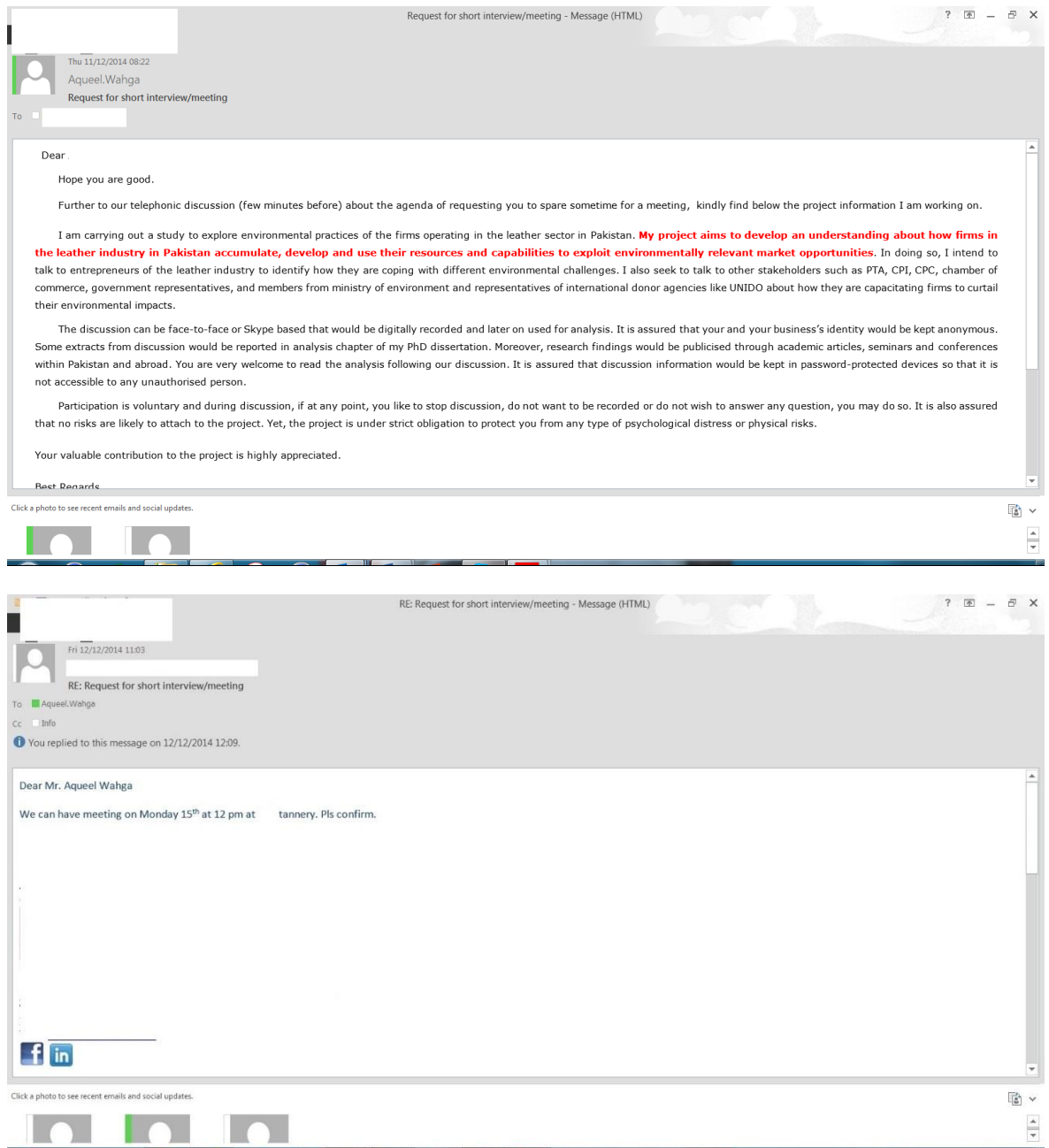
Agree to participate in the study mentioned above and also understand that I can withdraw from the study if I want to.

**Signature:**

**Dated:**

**Note:** If you like to know more about the research project, you are welcome to talk to me and / or my supervisors. Dr. Richard Blundel ([richard.blundel@open.ac.uk](mailto:richard.blundel@open.ac.uk)) and Dr. Anja Schaefer ([anja.schaefer@open.ac.uk](mailto:anja.schaefer@open.ac.uk))

## Appendix-VII: An illustration of email correspondence by the researcher for scheduling interviews





## Appendix-VIII: Illustrations of NVivo project

Environmental sustainability in Pakistan's leatherworking SMEs.nvp - NVivo

Look for: Search In: Nodes Find Now Clear Advanced Find X

**Nodes**

Name	Sources	References	Created On	Created By	Modified On	Modified By
Barriers to environmental improvement	21	301	07/05/2015 13:59	AW	06/10/2016 11:19	WAHGA
External Barriers	20	127	25/06/2015 12:24	AW	11/10/2016 14:00	WAHGA
Internal and External	5	10	25/06/2015 15:34	AW	11/10/2016 14:00	WAHGA
Internal Barriers	17	116	25/06/2015 12:24	AW	11/10/2016 14:00	WAHGA
I - Challenges of Production Process Stage	2	4	07/05/2015 15:04	AW	25/06/2015 15:28	AW
I - Firm Level Resource Scarcity	11	34	07/05/2015 15:09	AW	25/06/2015 15:32	AW
I - Labour with Lesser Capability	1	1	10/06/2015 15:05	AW	25/06/2015 15:37	AW
I - Lack of Education - Weak Human Capital	13	21	07/05/2015 14:03	AW	25/06/2015 15:39	AW
I - Lack of Professionalism	3	3	09/06/2015 15:20	AW	25/06/2015 15:42	AW
I - Less Progressive Owner-managers	5	9	02/06/2015 14:43	AW	25/06/2015 15:45	AW
I - Limited Environmental Awareness	7	12	27/05/2015 13:00	AW	25/06/2015 15:57	AW
I - Limited or Lack of Environmental Management Capability - No ISO 14001	6	6	07/05/2015 15:23	AW	25/06/2015 16:02	AW
I - Limited Pressure from Labour	2	4	07/05/2015 15:07	AW	25/06/2015 16:04	AW
I - Nature of Business	1	1	09/06/2015 15:05	AW	25/06/2015 16:34	AW
I - Poor planning - lack of planning ability	1	1	15/06/2015 13:44	AW	25/06/2015 16:31	AW
I - Rigid Attitude of Labour	8	9	07/05/2015 15:17	AW	25/06/2015 16:38	AW
I - Risk Averse - Hesitance to Adaptation	4	7	28/05/2015 15:07	AW	25/06/2015 16:39	AW
I - Shortage of Space	2	2	29/05/2015 16:06	AW	25/06/2015 16:40	AW
I - Time Constraint	1	1	16/06/2015 12:27	AW	25/06/2015 16:41	AW
I - Turn Over of Employees	1	1	10/06/2015 14:40	AW	25/06/2015 16:44	AW
Limited Environmental Engagement of Firms	3	4	07/05/2015 15:10	AW	25/06/2015 15:58	AW
Limited Influence of Individual Actions	1	1	08/05/2015 12:32	AW	25/06/2015 16:00	AW
Overcoming Barriers to Environmental Engagement	17	43	07/05/2015 15:25	AW	23/06/2015 16:42	AW

WAHGA 236 Items

Environmental sustainability in Pakistan's leatherworking SMEs.nvp - NVivo

Look for: Search In: Nodes Find Now Clear Advanced Find X

**Nodes**

Name	Sources	References	Created On	Created By	Modified On	Modified By
Barriers to environmental improvement	18	48	07/05/2015 13:59	AW	06/10/2016 11:19	WAHGA
Benefit of Staying in the Cluster - Locational Advantage	6	9	27/05/2015 12:46	AW	17/06/2015 11:48	AW
Case Nodes	0	0	08/05/2015 11:32	AW	23/06/2015 13:22	AW
Drivers of environmental improvement	18	140	08/05/2015 12:16	AW	06/10/2016 11:07	WAHGA
D - Better Image	2	3	10/06/2015 15:46	AW	06/10/2016 11:07	WAHGA
D - Compliance with regulations	7	14	26/05/2015 23:41	AW	06/10/2016 11:08	WAHGA
D - Customer requirements - satisfaction	14	47	28/05/2015 13:56	AW	06/10/2016 11:08	WAHGA
D - Economic benefits	11	26	26/05/2015 23:41	AW	06/10/2016 11:09	WAHGA
D - Personal ethical values	13	35	26/05/2015 23:42	AW	06/10/2016 11:09	WAHGA
D - Religious commitment	1	1	09/06/2015 16:38	AW	06/10/2016 11:09	WAHGA
D - Resource substitution	6	7	28/05/2015 14:52	AW	06/10/2016 11:09	WAHGA
D - Supply chain pressures	5	6	28/05/2015 14:06	AW	06/10/2016 11:09	WAHGA
Environmental Practices - Environmental Engagement	18	52	08/05/2015 12:13	AW	06/10/2016 11:20	WAHGA
Implications (Effects) of Pollution	19	59	08/05/2015 12:24	AW	06/10/2016 11:20	WAHGA
Microfoundations of EDC: Enabling Factors (Resources and Capabilities)	17	253	10/05/2015 20:20	AW	06/10/2016 11:20	WAHGA
Realisation of environmental issues	18	33	27/05/2015 12:45	AW	06/10/2016 11:36	WAHGA
Role of industrial organisations	7	16	25/05/2015 15:28	AW	06/10/2016 11:36	WAHGA
Sources of Pollution	10	33	27/05/2015 12:49	AW	27/05/2015 12:50	AW
The role of government	12	25	02/06/2015 14:18	AW	06/10/2016 11:35	WAHGA
The role of support institutes	17	63	08/05/2015 12:18	AW	06/10/2016 11:35	WAHGA

WAHGA 236 Items

**Appendix-IX: A representative node from NVivo – Customer requirements/satisfaction**

Firms	Coded extracts from NVivo
<b>SME 4</b>	<p>Internals\\SME 4 - § 4 references coded [ 6.21% Coverage]</p> <p>Reference 1 - 0.20% Coverage</p> <p>The third one is customer pressure.</p> <p>Reference 2 - 2.45% Coverage</p> <p>Durraiz: These are the brands that pressurise. We are not directly dealing with brand. We sell leather to the shoe manufacturers. These shoe manufactures are work with brands such as Nine West and some are the brands of German companies. Those people [brands] then ask them [shoe manufacturers] that the social activities of those from whom they [shoe manufacturers] buy are right or not and that they do not have child labour. They ask things like this. In these [requirements] then comes the water treatment plant. They inquire them that during the leather processes they [suppliers] are not using the restricted or prohibited chemicals. The wastes they are throwing outside are OK and are not very problematic. I mean there is some pressure from there [customers]. It is not too much. You cannot say that if [wastewater treatment] plant is not there then the business will stop, the situation it is not like this. But slightly the pressure has started to build.</p> <p>Reference 3 - 3.06% Coverage</p> <p>There is another thing i.e. LWG protocol.</p> <p>AW: What is that?</p> <p>Durraiz: It is leather work group. It is called LWG. It is organized by BLC. It is much in trend now. And in this treatment plant is must to cover. LWG gives three medals: Bronze, Silver and Gold. Basically, in this they come for two to three days to do your audit, which is organized by BLC that is in the UK.</p> <p>In this they check everything including the energy usage, the discharged effluent i.e. if the wastewater meets the NEQ standards, whether the wastes are monitored throughout the process, do you know the sourcing of the materials that are bought i.e. where that is coming from and where that is going. So, you should also have information about what your vendors are doing.</p> <p>AW: Right, the whole supply Chain.</p> <p>Durraiz: Yes, the whole supply chain. We also fall in that supply chain. Our vendors also come under this. Now, at times, our shoe units arrange our audit because their customers have asked them to do that. So, we are considered within the supply chain. So, now the pressure for treatment is coming from LWG. In that, it is must to cover the treatment plant. If the plant is not there, the values cannot be met and the LWG medal would not be awarded.</p> <p>Reference 4 - 0.50% Coverage</p> <p>We have never thought about all this before. When the pressure increased and it was realised that we would have to do this then we started to think where we could reduce it. All those were reduced then.</p>

<p><b>SME 7</b></p>	<p>Internals\\SME 7 - § 4 references coded [ 5.21% Coverage] References 1-2 - 1.92% Coverage</p> <p>Look, our international market, especially the European market where new laws has been introduced, they give more business to those who work on these things, whose factory is environmentally friendly and does not drain poisonous water, and does not cause land or air pollution. They give priority to those (who are more environmentally friendly). And in the near future, they will stop buying from those; rather they have already started doing that, which are not environmentally friendly industry.</p> <p>Good brands, which are considerate about the quality and quantity, do not buy leather from them (environmentally irresponsible or less responsible tanneries), from those who do not meet their parameters.</p> <p>References 3-4 - 3.29% Coverage</p> <p>Recently, we had customers from Germany. He works for BMW. He buys leather from us for gloves and motorbikes... he has a contract with BMW. About three weeks back they were here. Although they did not directly said anything to us, but they asked many questions about this (the environmental responsibility). There would be some weakness of our tannery, which we might not see but, the Germans who are more environment friendly, they pointed out some. He asked me many questions and all those questions were about the environment. For example, there were questions about solid waste... constantly he was asking where the water was drained.</p> <p>I was telling him that we have constructed manual lagoons but he kept asking where the drained water goes. Then what could I say to him. I truly told him all the facts. Then I said to him that we are shifting to the tannery in three years and there we would have a proper treatment plant. Here we have made the arrangements for just filtering the water so that solid waste is not drained with the water, but these lagoons do not clean the water. So, he asked me many questions.</p> <p>I kept answering him, but he really identified the weakness, which we would not have identified. And, no doubt, they are there.</p>
<p><b>SME 8</b></p>	<p>Internals\\SME 8 - § 4 references coded [ 6.06% Coverage] Reference 1 - 1.34% Coverage</p> <p>they are too strict ... all the gloves that I am exporting are CE approved. The reason is that if your gloves are not CE approved, you cannot sell those. And I have approved all the gloves from Centex Bell from Belgium. There are about 21 styles that I have approved...</p> <p>Reference 2 - 1.04% Coverage</p> <p>You may consider it a part of REACH. There are different norms in this about safety ... you need to pass all such tests otherwise you cannot sell there. All the styles of industrial gloves are CE approved.</p> <p>Reference 3 - 1.98% Coverage</p> <p>I have a customer from England who purchases welding gloves from me. Almost after every two to three months, a container is sent to him. But he wants to maintain the quality as he buys gloves of superior quality. A person who does a quality business and has developed a brand, it is the requirement of the brand</p>

	<p>that its gauge should not be less than 1.3 or 1.4 and it should be CE approved.</p> <p>Reference 4 - 1.70% Coverage</p> <p>Although the customers have certain requirements. They are also disseminating the information about getting the certification so that business does not face any challenges in the future and make good progress. Otherwise, we will lag behind. So at times, customer ask if we are working on getting BCSI ... so they motivate us.</p>
<b>SME 9</b>	<p>Internals\\SME 9 - § 6 references coded [ 9.60% Coverage]</p> <p>Reference 1 - 3.45% Coverage</p> <p>Tanning is a polluting business. However, only those who are controlling pollution and quality can run this business...we need to meet the requirements of European customers. We need to carefully use the chemicals in order to meet the requirements of customers.</p> <p>Reference 2 - 0.82% Coverage</p> <p>If we are to work, we need to meet the requirements of customer.</p> <p>Reference 3 - 0.50% Coverage</p> <p>Customer preference is our priority.</p> <p>Reference 4 - 1.53% Coverage</p> <p>We are facing pressure for environmental improvement from the government and also from the international market...</p> <p>Reference 5 - 1.15% Coverage</p> <p>The foreigners visit us so we have to keep the factory neat and clean and well organised.</p> <p>Reference 6 - 2.16% Coverage</p> <p>Alongside satisfying our customers, we also try our level best to comply with regulations. We personally take initiatives for better environmental engagement.</p>
<b>SME 10</b>	<p>Internals\\SME10 - § 1 reference coded [ 0.97% Coverage]</p> <p>Reference 1 - 0.97% Coverage</p> <p>Yes, of course they do. Look, they test the products we sell them and accordingly send us their requirements. They send us the list of tests that the product should pass. We fulfil their requirements.</p>
<b>SME 11</b>	<p>Internals\\SME11 - § 5 references coded [ 2.69% Coverage]</p> <p>References 1-2 - 0.77% Coverage</p> <p>Unless we introduce changes, we will not be able to make products according to the quality they require. And if we do not produce the quality products, it is very clear that we will have to quit the market. Who will buy from us? Who will ask us to make products for them?</p> <p>Reference 3 - 0.72% Coverage</p> <p>people are working with cheap countries, for example, with the countries in American region. No body is there to keep a check and balance and everything is acceptable there. However, there are some problems while operating in the Europe market.</p> <p>Reference 4 - 1.01% Coverage</p> <p>They ask certificates for each and everything they buy from us. They keep introducing the new requirements. For example, REACH. Earlier, they were some other requirements about Chrome (VI) and some other chemicals. There were a couple of others. But now they have introduced the complete system of REACH. I</p>

	<p>think there are 20 to 25 types of tests.</p> <p>Reference 5 - 0.19% Coverage</p> <p>Many people do this because their customers require it from them,</p>
<b>SME 12</b>	<p>Internals\\SME12 - § 6 references coded [ 3.85% Coverage]</p> <p>Reference 1 - 0.68% Coverage</p> <p>Any tannery that aims to export will have to adopt this (cleaner production processes). Some have either constructed the treatment plants or they are in the process of constructing these.</p> <p>Customers require this. The big brands ask about environmental compliance.</p> <p>Reference 2 - 0.47% Coverage</p> <p>we try our level best to run the processes in a manner that the product meets all the standards because if the product meets the standards only then the customer will confirm the order.</p> <p>Reference 3 - 0.34% Coverage</p> <p>It is not only the departmental requirement, the requirement of the government, but the international customers also require this.</p> <p>Reference 4 - 0.68% Coverage</p> <p>Governments asks about it and in many cases customers also require it. So you can say it is fifty fifty... because if the department (environment department) imposes the restrictions even then we will have to do it and definitely moral thinking also contribute to it.</p> <p>Reference 5 - 0.45% Coverage</p> <p>Because in that one factor is the international market, at the local level may be some one secures him using the personal links but at the market level these things will happen.</p> <p>Reference 6 - 1.23% Coverage</p> <p>I was working with a couple of brands. They had the requirement. So if things are done we will get benefit on some other avenues as well. So, we will establish a better image in the international market. It becomes easier to work with brands. Although they are tough but they have volume business. It is not like that if we have worked with a customer then we will have to find a new customer. Only one customer keeps working for years and years. So, it becomes our need to adopt those things.</p>
<b>SME 13</b>	<p>Internals\\SME13 - § 4 references coded [ 4.02% Coverage]</p> <p>References 1-2 - 0.51% Coverage</p> <p>due to the environmental issues that they faced there (in foreign countries mainly the Europe), they imposed the restrictions. So, gradually, restrictions were imposed.</p> <p>Reference 3 - 2.58% Coverage</p> <p>Look, there are two three things. One is that, I cannot say that this thinking developed because of the voluntary behaviour ('razakarana'). It never happens. Being a human, we sometimes behave selfishly. The govt. asked us to do it. Then the thinking developed that it is unavoidable for protecting our businesses. Then with the passage of time as we became aware about the nature of the chemicals, as I said educated people joined the industry, the educated people got to know better about the harmful effects of chemicals. Before that when there were not</p>

	<p>educated persons in the industry, the side effects of chemicals were not much known. So, as the educated people came and they raised the awareness that although we are earning money but these things also have different harmful effects then we all started to experience the change and we started to adopt all these practices.</p> <p>Reference 4 - 0.93% Coverage</p> <p>when customers come and during the round of the factory when they see what we are doing about cleaning, recycling or the work processes, they get satisfied. This gives us satisfaction and they also tell others about that the factory is clean, does good work and the set up is organised then things move ahead like this.</p>
<b>SME 14</b>	<p>Internals\\SME14 - § 4 references coded [ 2.65% Coverage]</p> <p>Reference 1 - 1.15% Coverage</p> <p>Yes, there are significant challenges regarding the chemicals. Particularly, those who sell in the European market they have certain requirements such as about avoiding Chrome VI and PC and PH level. Their requirements are about complying with REACH. So accordingly we process leather for them.</p> <p>Reference 2 - 0.47% Coverage</p> <p>So, I mean, there are different formulas and methods of doing it adopting which the requirements of buyers are fulfilled...</p> <p>Reference 3 - 0.58% Coverage</p> <p>the European customers, they require this thing so situation has improved. So, if the harmful elements are removed only then the articles can be sold.</p> <p>Reference 4 - 0.46% Coverage</p> <p>they (government) are asking us to do this because the foreign countries are also asking us to improve our environment...</p>
<b>SME 15</b>	<p>Internals\\SME15 - § 4 references coded [ 2.49% Coverage]</p> <p>Reference 1 - 0.43% Coverage</p> <p>The demands, the requirements and the testing level are strong (tough). It is very important to match their requirements.</p> <p>Reference 2 - 0.31% Coverage</p> <p>It (restriction) is about the environment that what environmental measures are taken.</p> <p>Reference 3 - 0.50% Coverage</p> <p>Though I made my efforts, but all my customers appreciated that a lot. And that is a step for moving towards ISO 14000 and now we shall work on that.</p> <p>Reference 4 - 1.25% Coverage</p> <p>So, if we meet their standards and requirements then we get the business. End of the day, still the third world is cheaper. It is good for manufacturing. But their concerns are: that we are not using child labour, not damaging the environment and not using any harmful chemicals in the product. If they are assured of these things only then they will do business.</p>
<b>SME 16</b>	<p>Internals\\SME16 - § 3 references coded [ 4.85% Coverage]</p> <p>Reference 1 - 3.34% Coverage</p> <p>As far as the environmental problems are concerned, particularly for the exports, the European regulations or if you are exporting to USA they also have a law, the law for California, so those have become stricter. So, if we are to process the</p>

	<p>leather here for selling to them and for example, if Chrome VI is detected in that or some other prohibited elements are detected, they will not buy that. Due to this, things are being implemented on us that any product that we purchase should not contain those elements.</p> <p>Ultimately, it is coming from the top. It is coming as a trickle down effect. It is coming to us from the customers.</p> <p>We have customers and then they have their own customers, those who are buying from them. So, they ask that they do not want metals in the products. For example, people have problems with Chrome that the product should be chrome free. That the product should not be carcinogenic and then there are a couple of more chemicals that are also harmful.</p> <p>Reference 2 - 0.57% Coverage</p> <p>Although, this is wrong but for us it is all about maximum uptake of the chemicals, better quality and that the customer should be satisfied. This remains our focus.</p> <p>Reference 3 - 0.94% Coverage</p> <p>if our customers detect something and ask for reducing that element, clearly, we will have to reduce that. If there is some problem in our supply chain, we will ask them to address that, if they are buying raw from someone else they will have to ask them to address the problem.</p>
<b>SME 17</b>	<p>Internals\\SME17 - § 1 reference coded [ 4.05% Coverage]</p> <p>Reference 1 - 4.05% Coverage</p> <p>Yes, it has happened to us. A couple of customers have declined to work with us. We had a European customer and he was a well-established customer at the international level in gloving. They had a requirement to audit the whole process, from the starting point to the end point. They came to us and surveyed. For the survey, the hired services from SGS, it is also an auditing company. They audited us and took snaps, interviewed us and forwarded the information to the company. It was a big company and we had agreed for a contract with them, but the company said the safety standards and the pollution discharge is something that we cannot avail due to which we apologies that we cannot do business with you. We lost the customer.</p>
<b>SME 18</b>	<p>Internals\\SME18 - § 3 references coded [ 2.16% Coverage]</p> <p>Reference 1 - 1.03% Coverage</p> <p>Because it is must, for the export business it is must. The importers want to know are you REACH compliant or are you ISO certified. So it is must without it you are not going to do the export business.</p> <p>Reference 2 - 0.47% Coverage</p> <p>(Pressure for Environmental Engagement is coming) From the buyers and the government.</p> <p>Reference 3 - 0.66% Coverage</p> <p>And the pressure from the government, pressure from the customers, pressures from the chemical companies, we have to do it.</p>
<b>SME 19</b>	<p>Internals\\SME19 - § 3 references coded [ 2.77% Coverage]</p> <p>Reference 1 - 1.56% Coverage</p> <p>Look here, one is orthodox thinking and the other one is modern thinking. In Orthodox thinking, they make the product and then create demand for that. In</p>

	<p>modern thinking product is developed according to the demand. You look at the demand and the market and accordingly develop products.</p> <p>There are certain specifications, which you cannot break (avoid), for example, their fittings, and the product and the details of the product. All these things, what to make and what not to make and what to do and what not to do, you will think about these.</p> <p>Reference 2 - 0.50% Coverage</p> <p>All these things are done because of the requirements. No body wants to spend money. It is because of the customer requirements. The customers come with their requirement.</p> <p>Reference 3 - 0.71% Coverage</p> <p>If you claim that you know everything and have the competency to do things, no, it does not happen like that. You need to know at least something from somewhere. Due to some hurdle, we have to learn things from other sources. It is all customer based.</p>
<b>SME 20</b>	<p>Internals\\SME20 - § 1 reference coded [ 2.89% Coverage]</p> <p>Reference 1 - 2.89% Coverage</p> <p>Look, we try our level best to use chemicals according to their (international customers) requirements. Those chemicals which are banned, there is complete list of those; I think they are more than 170. Second the chemical companies provide us certification, they assure us that their chemicals oblige the REACH regulations, they follow those. We therefore use their chemicals. Those chemical which are banned, we do not use here.</p>



### Appendix-X: All nodes from a representative case SME 7

Nodes	Coded extracts from NVivo
<b>Sources of pollution</b>	<p>Internals\\SME 7 - § 1 reference coded [ 0.14% Coverage] Reference 1 - 0.14% Coverage</p> <p>Mainly that (contaminated water) causes pollution.</p> <p>Internals\\SME 7 - § 2 references coded [ 0.57% Coverage] Reference 1 - 0.17% Coverage</p> <p>At this stage, the main source of pollution is the solid waste. Reference 2 - 0.40% Coverage</p> <p>Somehow, we have to throw it (solidwaste) somewhere and that is having negative impact on the environment. It is impacting, directly or indirectly.</p> <p>Internals\\SME 7 - § 1 reference coded [ 0.47% Coverage] Reference 1 - 0.47% Coverage</p> <p>its (generator's) noise was so torturous not only for us but also for the workers. Although these are there in almost every factory but that was so torturous. We have arranged two generators.</p>
<b>Implications of pollution</b>	<p>Internals\\SME 7 - § 2 references coded [ 0.72% Coverage] Reference 1 - 0.28% Coverage</p> <p>People say environment is not a problem. Ask someone whose child is affected. Environment is a problem. Reference 2 - 0.43% Coverage</p> <p>Yes, industry does cause pollution and we have been given a lot of awareness about this and we welcome every team that comes to educate us or train us.</p> <p>Internals\\SME 7 - § 1 reference coded [ 0.59% Coverage] Reference 1 - 0.59% Coverage</p> <p>The water in those areas has contaminated our lands a lot. On digging the water with a pump, and on keeping that in a pot for a while, you will see what that does to the pot. That will change its shape, it does not look like water...</p> <p>Internals\\SME 7 - § 1 reference coded [ 0.26% Coverage] Reference 1 - 0.26% Coverage</p> <p>And it is very important. Believe you me with the passage of time our life span is getting shorter.</p>
<b>Environmetal practices</b>	
<b>Physical resource improvement</b>	<p>Internals\\SME 7 - § 13 references coded [ 10.46% Coverage] Reference 1 - 0.49% Coverage</p> <p>For buffing, the dust that is generated, contains very tiny particles, for this we have attached dust collector boxes, with these fabric filters are attached, we collect it there. Reference 2 - 0.77% Coverage</p>

	<p>In this, first of all, it was our drainage system. Its flow towards the main drain was very fast. We slowed it down by changing its shape, its slope. Doing so resulted in the gathering of sludge in our drain, which we now clean on weekly basis. Due to this sludge is not drained to the main drain.</p> <p>Reference 3 - 0.24% Coverage</p> <p>I think due to this (water meters), within Sialkot, we started to use 30 percent less water.</p> <p>Reference 4 - 0.16% Coverage</p> <p>Yes, we have fitted (the water meters and dust collectors).</p> <p>Reference 5 - 0.15% Coverage</p> <p>the benefit of dust collector is that dust does not fly.</p> <p>Reference 6 - 0.74% Coverage</p> <p>Look, I think, the main reason is this (ISO certification) that our factory is clean. On visiting the tannery physically, you will see very few cuttings or dust on the floor. I think, this is something everyone should give attention to, but people do not pay attention to this.</p> <p>Reference 7 - 0.53% Coverage</p> <p>We have fitted the water meters for measuring the water. You cannot measure things just by looking at them. Yes, by repeating the process, you can develop an idea, but measurements are necessary.</p> <p>Reference 8 - 1.01% Coverage</p> <p>All our windows are on a height. The more heightened they are the better light you will get in the hall... so I do not need light in my halls. There are only some specific areas where some special work is in progress there we need electric lights. Otherwise, you can see on your back, in the building we have constructed the windows are quite high. Its light can penetrate up to fifty feet...</p> <p>Reference 9 - 0.26% Coverage</p> <p>In the whole Sialkot, there may 3 or 4 tanneries where plants are planted and ours is one of those.</p> <p>Reference 10 - 1.39% Coverage</p> <p>People say plants do not survive in the tannery. How they can grow in the presence of poison. But, in my tannery, you can see a small lawn where grass is grown, though it is smaller in size. It is smaller because we had limited area. So, you can greenery. Even on the road (outside), you will plants, whether of 4 feet, 6 feet or 20 feet, I have planted them personally. I have been planting even in front of other tanneries, even though that was not my area. I have done plantation there as well and they cooperate with me in that.</p> <p>Reference 11 - 2.30% Coverage</p> <p>Only the wooden drums that are fitted here, in which leather is coloured and chemicals are added, are local and very few machines are local. Almost 90 percent of our machinery is made in Italy... the local machines that are successful we are using those such as the splitting machine and the 'Chukram'... because they sell machines to the whole world they make expenditure, the local manufacturers make machines for the local market</p>
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	<p>only. Their budget does not allow them or if their machines are sold internationally only then our local machines can be better. But in our sector the Italian machines are successful... the imported machines are productively efficient and save resources. The number of pieces that a local machines processes in an hour, an Italian machine process those in few minutes. Not only we get efficient production but also the accuracy.</p> <p>Reference 12 - 0.91% Coverage</p> <p>We already had one and adopted a new technology introduced for energy saving. Instead of using steam, they converted that into the Sui-gas system, the direct heating system. We have saved a lot by adopting that. Earlier, we used to run our boiler with diesel then it was converted on gas and then they introduced the direct heating system.</p> <p>Reference 13 - 1.52% Coverage</p> <p>We have a spry plant machine that is made in Italy, within Sialkot, I have been guiding people to replace the steam heating with direct heating system for these. He charges only Rs. 250,000 for converting one machine. That can work either on steam of direct heating. So, that (the adaptation) does not cut off the original system but keeps the both. Within Sialkot, I have invited about 15 to 20 people to come and see that if Rs. 100 were spent for heating with this system you can get the same amount of heat with Rs. 35. It means that I have helped them to save about 65 percent.</p>
<b>Process improvement</b>	<p>Internals\\SME 7 - § 9 references coded [ 5.13% Coverage]</p> <p>Reference 1 - 0.30% Coverage</p> <p>Moreover, maximum chemical is exhausted in the leather so that minimum (chemical) is discharged with water.</p> <p>Reference 2 - 0.41% Coverage</p> <p>Yes, it (water pollution) is (an issue) . But, in order to minimise it, it is imperative that chemicals are exhausted as much as possible in the leather.</p> <p>Reference 3 - 0.44% Coverage</p> <p>At this stage we try our level best to re-use the leather (cuttings) and it is used to produce leather board. So, it is sold to them (the leather board manufacturers).</p> <p>Reference 4 - 0.51% Coverage</p> <p>Then there is wastage that comes from leather shaving, in order to make the leather thinner. We mix that (dust) with leather shaving, which is then used for manufacturing the leather board.</p> <p>Reference 5 - 0.43% Coverage</p> <p>Any other waste that is not saleable is dumped. There is an institute here, called CPC. They used to collect the solid waste for dumping at an appropriate place.</p> <p>Reference 6 - 0.50% Coverage</p> <p>We are doing much better. Everything is weighed in our tannery. We weigh the leather and chemicals and care is taken to the extent that grams are also considered while weighing materials.</p> <p>Reference 7 - 0.53% Coverage</p> <p>We have fitted the water meters for measuring the water. You cannot</p>

	<p>measure things just by looking at them. Yes, by repeating the process, you can develop an idea, but measurements are necessary.</p> <p>Reference 8 - 1.01% Coverage</p> <p>All our windows are on a height. The more heightened they are the better light you will get in the hall... so I do not need light in my halls. There are only some specific areas where some special work is in progress there we need electric lights. Otherwise, you can see on your back, in the building we have constructed the windows are quite high. Its light can penetrate up to fifty feet...</p> <p>Reference 9 - 1.01% Coverage</p> <p>In addition to that, on regular basis, we keep improving things for resource saving. For example, we trim leather before processing so that chemicals are not used on the waste leather.</p> <p>The process cost for leather is about 30 to 40 Rs. per square foot, from wet blue to finish, so we trim the waste leather before running the process and therefore we need to use lesser chemicals.</p>
<b>Human capital development</b>	<p>Internals\\SME 7 - § 3 references coded [ 1.19% Coverage]</p> <p>Reference 1 - 0.20% Coverage</p> <p>For minimizing it (the pollution), what we do is that, we train our staff.</p> <p>Reference 2 - 0.42% Coverage</p> <p>Although our staff was already educated, they (CPC) trained them about using the chemicals in a better way so that minimum chemicals are drained with water.</p> <p>Reference 3 - 0.57% Coverage</p> <p>we appreciate them and make them responsible by saying that now you will have to take care of others as well because I cannot look after everyone of you. So, anyone who wants to learn, he become the leader of the team.</p>
<b>Environmental management system</b>	<p>Internals\\SME 7 - § 6 references coded [ 3.82% Coverage]</p> <p>Reference 1 - 0.29% Coverage</p> <p>We have displayed our environmental policy on the signboards and it is there to follow for all others as well.</p> <p>Reference 2 - 1.05% Coverage</p> <p>So, we have given them masks so that while breathing they take in the filtered air. Because (despite installing the dust collectors) 5 to 10 percent dust still fly, which is of very micro size, and (masks are provided so) that the workers do not taken in (dust) and remain safe. And our dust collectors suck about 95 to 97 percent of the dust. If you like to take some snaps I will agree for that even.</p> <p>Reference 3 - 0.79% Coverage</p> <p>We are heading towards that (better environmental engagement) at a faster pace. But we are not going (for environmental improvement) just to get the business; we are going for this because it is imperative for the survival of human beings. It is important to save our children from pollution.</p> <p>Reference 4 - 0.37% Coverage</p>

	<p>we will become 100 percent or 90 percent better when we will shift to the tannery zone. And we are willing to shift there as early as possible.</p> <p>Reference 5 - 0.95% Coverage</p> <p>Yes, we have thought a lot about this. Now we will bring that on the paper and later on in practice. Although, my tannery is in a good condition, but it will not be like this, it will be different. The cleaning and safety systems will be much better there. I will also try to make maximum use technology there instead of adopting the labour intensive processes.</p> <p>Reference 6 - 0.37% Coverage</p> <p>Yes, we renew it every year. We pay the annual fee for this... they visit us for about ten days, check of our files and tell us about any updates.</p>
<b>Other environmental initiatives</b>	<p>Internals\\SME 7 - § 8 references coded [ 4.76% Coverage]</p> <p>Reference 1 - 0.68% Coverage</p> <p>We deal in finished leather. We have two units. One is in Kasur and that is run on rental basis. Raw to wet blue is processed there. Because there is a water treatment plant and the poisonous water of the tannery is treated there. This unit is for finishing.</p> <p>Reference 2 - 0.69% Coverage</p> <p>Within the leather sector, we have to types of industries... one is raw to wet blue, which is very poisonous. We deal with the stage of wet blue to finish. At this stage, limited poison is generated. At this stage, the main source of pollution is the solid waste.</p> <p>Reference 3 - 0.17% Coverage</p> <p>We also educated our neighbouring unit about it (environment).</p> <p>Reference 4 - 0.52% Coverage</p> <p>I have told the neighbors to build small ponds/lagoons to allow the solid waste and sludge to settle down so that it is not drained to the main drain. I will also show you that after the interview.</p> <p>Reference 5 - 0.48% Coverage</p> <p>Look; I am not only getting myself ready but also trying to take along my neighbouring units. I keep motivating them. In a while, I will also take you around in the adjacent tannery.</p> <p>Reference 6 - 0.36% Coverage</p> <p>Similarly, I keep reminding others to support me for this (environmental improvement). I think our street is much better than others.</p> <p>Reference 7 - 0.34% Coverage</p> <p>First of all you need to become environmentally responsible so that others also do that. I keep trying to engage others as well.</p> <p>Reference 8 - 1.52% Coverage</p> <p>We have a spry plant machine that is made in Italy, within Sialkot, I have been guiding people to replace the steam heating with direct heating system for these. He charges only Rs. 250,000 for converting one machine. That can work either on steam of direct heating. So, that (the adaptation) does not cut off the original system but keeps the both. Within Sialkot, I have invited about 15 to 20 people to come and see that if Rs. 100 were spent for heating with this system you can get the same amount of heat</p>

	with Rs. 35. It means that I have helped them to save about 65 percent.
<b>Environmetnal drivers</b>	
<b>Customer's requirement</b>	<p>Internals\\SME 7 - § 2 references coded [ 5.21% Coverage]</p> <p>Reference 1 - 1.92% Coverage</p> <p>Look, our international market, especially the European market where new laws has been introduced, they give more business to those who work on these things, whose factory is environmentally friendly and does not drain poisonous water, and does not cause land or air pollution. They give priority to those (who are more environmentally friendly). And in the near future, they will stop buying from those; rather they have already started doing that, which are not environmentally friendly industry.</p> <p>Good brands, which are considerate about the quality and quantity, do not buy leather from them (environmentally irresponsible or less responsible tanneries), from those who do not meet their parameters.</p> <p>Reference 2 - 3.29% Coverage</p> <p>Recently, we had customers from Germany. He works for BMW. He buys leather from us for gloves and motorbikes... he has a contract with BMW. About three weeks back they were here. Although they did not directly said anything to us, but they asked many questions about this (the environmental responsibility). There would be some weakness of our tannery, which we might not see but, the Germans who are more environment friendly, they pointed out some. He asked me many questions and all those questions were about the environment. For example, there were questions about solid waste... constantly he was asking where the water was drained.</p> <p>I was telling him that we have constructed manual lagoons but he kept asking where the drained water goes. Then what could I say to him. I truly told him all the facts. Then I said to him that we are shifting to the tannery in three years and there we would have a proper treatment plant. Here we have made the arrangements for just filtering the water so that solid waste is not drained with the water, but these lagoons do not clean the water. So, he asked me many questions.</p> <p>I kept answering him, but he really identified the weakness, which we would not have identified. And, no doubt, they are there.</p>
<b>Economic benefits</b>	<p>Internals\\SME 7 - § 4 references coded [ 2.43% Coverage]</p> <p>Reference 1 - 0.86% Coverage</p> <p>From this we get two benefits. First, our chemicals costs are reduced as maximum gets penetrated in the leather. There are some tanneries that are not well aware about this. About 30 percent of their chemicals are drained with water. So, it (chemicals) not only costs them but is also drained with water, about 30 percent.</p> <p>Reference 2 - 0.79% Coverage</p> <p>We are heading towards that (better environmental engagement) at a faster pace. But we are not going (for environmental improvement) just to get the business; we are going for this because it is imperative for the</p>

	<p>survival of human beings. It is important to save our children from pollution.</p> <p>Reference 3 - 0.41% Coverage</p> <p>That is run on gas and unfortunately now gas is not available. They have disconnected out industrial meters for the next 3 to 4 months and we are using LPG.</p> <p>Reference 4 - 0.38% Coverage</p> <p>It has also improved our costing... ISO actually tells you about controlling the costs and about the measures for safety. It tell you all this.</p>
<b>Personal ethical values</b>	<p>Internals\\SME 7 - § 6 references coded [ 4.67% Coverage]</p> <p>Reference 1 - 1.85% Coverage</p> <p>As a human, it is my duty towards others. I have come here to live say for 40, 50 or 60 years. An individual comes here as a guest, he does not know, but if he keep himself safe and also keep other safe as well, for having good health and also for the health of the children it is important.</p> <p>I would like to request to everyone to pay attention to this. We are going to kill our children and ourselves. We do not have any idea about the damage that we have caused to ourselves. I am not talking about you or myself.</p> <p>Overall, if you see, people are dying. They do not know how many diseases they have. They might have never got their medical tests done. And what is the main reason? This is the reason (pollution).</p> <p>Reference 2 - 0.79% Coverage</p> <p>We are heading towards that (better environmental engagement) at a faster pace. But we are not going (for environmental improvement) just to get the business; we are going for this because it is imperative for the survival of human beings. It is important to save our children from pollution.</p> <p>Reference 3 - 1.03% Coverage</p> <p>Yesterday, in a meeting, I said something due to which many friends got angry with me because they thought due to my statement government would impose more restrictions on us. I simply said to them, for how many years you have come here, please; do not spread poison for others. We are only 100 or 200 people whereas about 13 lakh people reside in Sialkot and you are getting angry with me...</p> <p>Reference 4 - 0.51% Coverage</p> <p>After doing all this, I feel satisfied. So, when I visit my factory I feel as if I am out for recreation in some Park. I mean I do not feel bothered while working. I get encouraged to make it better.</p> <p>Reference 5 - 0.28% Coverage</p> <p>if you are environmentally friendly, your house and your factory will automatically become beautiful.</p> <p>Reference 6 - 0.21% Coverage</p> <p>It all depends on you that how much you want to save yourself and others from this</p>
<b>Environmental capabilities</b>	

<p><b>Adaptation (resource acquisition, deployment and internalisation)</b></p>	<p>Internals\\SME 7 - § 6 references coded [ 7.67% Coverage]</p> <p>Reference 1 - 0.75% Coverage</p> <p>first of all, it was our drainage system. Its flow towards the main drain was very fast. We slowed it down by changing its shape, its slope. Doing so resulted in the gathering of sludge in our drain, which we now clean on weekly basis. Due to this sludge is not drained to the main drain.</p> <p>Reference 2 - 0.53% Coverage</p> <p>We have fitted the water meters for measuring the water. You cannot measure things just by looking at them. Yes, by repeating the process, you can develop an idea, but measurements are necessary.</p> <p>Reference 3 - 1.01% Coverage</p> <p>All our windows are on a height. The more heightened they are the better light you will get in the hall... so I do not need light in my halls. There are only some specific areas where some special work is in progress there we need electric lights. Otherwise, you can see on your back, in the building we have constructed the windows are quite high. Its light can penetrate up to fifty feet...</p> <p>Reference 4 - 0.91% Coverage</p> <p>We already had one and adopted a new technology introduced for energy saving. Instead of using steam, they converted that into the Sui-gas system, the direct heating system. We have saved a lot by adopting that. Earlier, we used to run our boiler with diesel then it was converted on gas and then they introduced the direct heating system.</p> <p>Reference 5 - 1.52% Coverage</p> <p>We have a spry plant machine that is made in Italy, within Sialkot, I have been guiding people to replace the steam heating with direct heating system for these. He charges only Rs. 250,000 for converting one machine. That can work either on steam of direct heating. So, that (the adaptation) does not cut off the original system but keeps the both. Within Sialkot, I have invited about 15 to 20 people to come and see that if Rs. 100 were spent for heating with this system you can get the same amount of heat with Rs. 35. It means that I have helped them to save about 65 percent.</p> <p>Reference 6 - 2.95% Coverage</p> <p>I was visiting Faisalabad to see a guy for getting a better boiler; he told me that he was doing this in the textile sector... he said to me that he would visit us and share with us some new process. He showed me the snaps and explained me the process. I asked him to modify one (machine). He said it was his first experience in the leather industry. It may not look nice but it will perform the function because I am not sure what kind of effects it will have on your machine.</p> <p>When he fitted that (reengineered the machine), we were really happy to see how that had reduced our expenditure. We even stopped running the boiler for some time and that was successful. Then he said let me work on the second machine and I would maintain its presentation. When we gave him the machine, he really addressed all the mistakes. When he modified the first machine, he did not even earn the profit from us. However, he</p>
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	<p>earned the profit when he modified the second machine and in that he also addressed all the problems. He said let me improve me the presentation of the earlier process, but I said it does not matter at least it is working.</p>
<b>Process innovation</b>	<p>Internals\\SME 7 - § 1 reference coded [ 2.95% Coverage] Reference 1 - 2.95% Coverage</p> <p>I was visiting Faisalabad to see a guy for getting a better boiler; he told me that he was doing this in the textile sector... he said to me that he would visit us and share with us some new process. He showed me the snaps and explained me the process. I asked him to modify one (machine). He said it was his first experience in the leather industry. It may not look nice but it will perform the function because I am not sure what kind of effects it will have on your machine.</p> <p>When he fitted that (reengineered the machine), we were really happy to see how that had reduced our expenditure. We even stopped running the boiler for some time and that was successful. Then he said let me work on the second machine and I would maintain its presentation. When we gave him the machine, he really addressed all the mistakes. When he modified the first machine, he did not even earn the profit from us. However, he earned the profit when he modified the second machine and in that he also addressed all the problems. He said let me improve me the presentation of the earlier process, but I said it does not matter at least it is working.</p>
<b>Incremental and continuous learning / information seeking</b>	<p>Internals\\SME 7 - § 2 references coded [ 1.20% Coverage] Reference 1 - 0.36% Coverage</p> <p>Initially, we had a specific employee who used to maintain things related to ISO. Now, most of the employees are trained to do that job.</p> <p>Reference 2 - 0.84% Coverage</p> <p>We properly keep doing so on regular basis... you may consider that after about every six months Samsung introduces a new model, if we keep watching it daily. I learned this thing from the Koreans, they say 'always thinking, thinking, thinking for the better'. So, for improvement, we keep an eye on this all the time.</p>
<b>Social capital / networking for environmental learning</b>	<p>Internals\\SME 7 - § 7 references coded [ 9.51% Coverage] Reference 1 - 0.42% Coverage</p> <p>Although our staff was already educated, they (CPC) trained them about using the chemicals in a better way so that minimum chemicals are drained with water.</p> <p>Reference 2 - 0.29% Coverage</p> <p>Yes, customers provide environmental information and we also get that from other international sources.</p> <p>Reference 3 - 0.19% Coverage</p> <p>The CPC, especially, focused on this and I really thank them for this ...</p> <p>Reference 4 - 0.84% Coverage</p> <p>We properly keep doing so on regular basis... you may consider that after about every six months Samsung introduces a new model, if we keep watching it daily. I learned this thing from the Koreans, they say 'always thinking, thinking, thinking for the better'. So, for improvement, we keep</p>

	<p>an eye on this all the time.</p> <p><b>Reference 5 - 3.29% Coverage</b></p> <p>Recently, we had customers from Germany. He works for BMW. He buys leather from us for gloves and motorbikes... he has a contract with BMW. About three weeks back they were here. Although they did not directly said anything to us, but they asked many questions about this (the environmental responsibility). There would be some weakness of our tannery, which we might not see but, the Germans who are more environment friendly, they pointed out some. He asked me many questions and all those questions were about the environment. For example, there were questions about solid waste... constantly he was asking where the water was drained.</p> <p>I was telling him that we have constructed manual lagoons but he kept asking where the drained water goes. Then what could I say to him. I truly told him all the facts. Then I said to him that we are shifting to the tannery in three years and there we would have a proper treatment plant. Here we have made the arrangements for just filtering the water so that solid waste is not drained with the water, but these lagoons do not clean the water. So, he asked me many questions.</p> <p>I kept answering him, but he really identified the weakness, which we would not have identified. And, no doubt, they are there.</p> <p><b>Reference 6 - 1.52% Coverage</b></p> <p>We have a spry plant machine that is made in Italy, within Sialkot, I have been guiding people to replace the steam heating with direct heating system for these. He charges only Rs. 250,000 for converting one machine. That can work either on steam of direct heating. So, that (the adaptation) does not cut off the original system but keeps the both. Within Sialkot, I have invited about 15 to 20 people to come and see that if Rs. 100 were spent for heating with this system you can get the same amount of heat with Rs. 35. It means that I have helped them to save about 65 percent.</p> <p><b>Reference 7 - 2.95% Coverage</b></p> <p>I was visiting Faisalabad to see a guy for getting a better boiler; he told me that he was doing this in the textile sector... he said to me that he would visit us and share with us some new process. He showed me the snaps and explained me the process. I asked him to modify one (machine). He said it was his first experience in the leather industry. It may not look nice but it will perform the function because I am not sure what kind of effects it will have on your machine.</p> <p>When he fitted that (reengineered the machine), we were really happy to see how that had reduced our expenditure. We even stopped running the boiler for some time and that was successful. Then he said let me work on the second machine and I would maintain its presentation. When we gave him the machine, he really addressed all the mistakes. When he modified the first machine, he did not even earn the profit from us. However, he earned the profit when he modified the second machine and in that he also addressed all the problems. He said let me improve me the presentation of</p>
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	the earlier process, but I said it does not matter at least it is working.
<b>Flexibility and openness to change</b>	<p>Internals\\SME 7 - § 4 references coded [ 5.75% Coverage] Reference 1 - 0.43% Coverage</p> <p>Yes, (the leather) industry does cause pollution and we have been given a lot of awareness about this and we welcome every team that comes to educate us or train us.</p> <p>Reference 2 - 0.84% Coverage</p> <p>We properly keep doing so on regular basis... you may consider that after about every six months Samsung introduces a new model, if we keep watching it daily. I learned this thing from the Koreans, they say 'always thinking, thinking, thinking for the better'. So, for improvement, we keep an eye on this all the time.</p> <p>Reference 3 - 1.52% Coverage</p> <p>We have a spry plant machine that is made in Italy, within Sialkot, I have been guiding people to replace the steam heating with direct heating system for these. He charges only Rs. 250,000 for converting one machine. That can work either on steam or direct heating. So, that (the adaptation) does not cut off the original system but keeps the both. Within Sialkot, I have invited about 15 to 20 people to come and see that if Rs. 100 were spent for heating with this system you can get the same amount of heat with Rs. 35. It means that I have helped them to save about 65 percent.</p> <p>Reference 4 - 2.95% Coverage</p> <p>I was visiting Faisalabad to see a guy for getting a better boiler; he told me that he was doing this in the textile sector... he said to me that he would visit us and share with us some new process. He showed me the snaps and explained me the process. I asked him to modify one (machine). He said it was his first experience in the leather industry. It may not look nice but it will perform the function because I am not sure what kind of effects it will have on your machine.</p> <p>When he fitted that (reengineered the machine), we were really happy to see how that had reduced our expenditure. We even stopped running the boiler for some time and that was successful. Then he said let me work on the second machine and I would maintain its presentation. When we gave him the machine, he really addressed all the mistakes. When he modified the first machine, he did not even earn the profit from us. However, he earned the profit when he modified the second machine and in that he also addressed all the problems. He said let me improve me the presentation of the earlier process, but I said it does not matter at least it is working.</p>
<b>Path creation – investing in new environmental projects</b>	<p>Internals\\SME 7 - § 1 reference coded [ 2.95% Coverage] Reference 1 - 2.95% Coverage</p> <p>I was visiting Faisalabad to see a guy for getting a better boiler; he told me that he was doing this in the textile sector... he said to me that he would visit us and share with us some new process. He showed me the snaps and explained me the process. I asked him to modify one (machine). He said it was his first experience in the leather industry. It may not look nice but it will perform the function because I am not sure what kind of effects it will</p>

	<p>have on your machine.</p> <p>When he fitted that (reengineered the machine), we were really happy to see how that had reduced our expenditure. We even stopped running the boiler for some time and that was successful. Then he said let me work on the second machine and I would maintain its presentation. When we gave him the machine, he really addressed all the mistakes. When he modified the first machine, he did not even earn the profit from us. However, he earned the profit when he modified the second machine and in that he also addressed all the problems. He said let me improve me the presentation of the earlier process, but I said it does not matter at least it is working.</p>
<b>Environmental planning</b>	<p>Internals\\SME 7 - § 4 references coded [ 2.00% Coverage]</p> <p>Reference 1 - 0.39% Coverage</p> <p>Rest, we will become 100 percent or 90 percent better when we will shift to the tannery zone. And we are willing to shift there as early as possible.</p> <p>Reference 2 - 0.43% Coverage</p> <p>I learned this thing from the Koreans, they say 'always thinking, thinking, thinking for the better'. So, for improvement, we keep an eye on this all the time.</p> <p>Reference 3 - 0.23% Coverage</p> <p>So, for the betterment, I will keep speeding up the things as long as I am in good health.</p> <p>Reference 4 - 0.95% Coverage</p> <p>Yes, we have thought a lot about this. Now we will bring that on the paper and later on in practice. Although, my tannery is in a good condition, but it will not be like this, it will be different. The cleaning and safety systems will be much better there. I will also try to make maximum use technology there instead of adopting the labour intensive processes.</p>
<b>Role of intemdairy organisation – CPC</b>	<p>Internals\\SME 7 - § 3 references coded [ 1.36% Coverage]</p> <p>Reference 1 - 0.42% Coverage</p> <p>Although our staff was already educated, they (CPC) trained them about using the chemicals in a better way so that minimum chemicals are drained with water</p> <p>Reference 2 - 0.23% Coverage</p> <p>They used to train about better the handling of chemicals and about using safety shoes</p> <p>Reference 3 - 0.71% Coverage</p> <p>they also facilitated firms for fixing safety grills. They also installed dust collectors in a number of tanneries. Then they also installed the water measurement meters... I think due to this (water meters), within Sialkot, we started to use 30 percent less water.</p>
<b>Environmental barriers – External</b>	

<b>Declining support from CPC</b>	<p>Internals\\SME 7 - § 2 references coded [ 1.03% Coverage] Reference 1 - 0.75% Coverage</p> <p>But, I think, their contact with Norway has ended. I think it was for about 10 years. Due to this, our sector is facing many problems. Somehow, we have to throw it (solidwaste) somewhere and that is having negative impact on the environment. It is impacting, directly or indirectly.</p> <p>Reference 2 - 0.28% Coverage</p> <p>They used to do this, but I think now their project has come to an end and they no more provide this service.</p>
<b>Negative attitude of peers</b>	<p>Internals\\SME 7 - § 2 references coded [ 1.30% Coverage] Reference 1 - 0.30% Coverage</p> <p>However, some cooperate and some do not.</p> <p>Reference 2 - 1.00% Coverage</p> <p>Some who are not willing to take measure want that they should get every thing done, already. But in reality, it does not happen. When you are grown up, a mother will cook food for you but will not put it into your mouth. They think that they should get everything done because it is their right. But is it your right to spread filthiness. For every thing, we target the government.</p> <p>Internals\\SME 7 - § 1 reference coded [ 2.93% Coverage] Reference 1 - 2.93% Coverage</p> <p>Look, there are two types of things in it. I will not say that only rich people are more welcoming. The fact is that when a person learns to live a better life he starts worrying about his life style. If we have 10 children to look after and remain worried about them then how we can quickly get motivated for this (environmental engagement). So, this is a big reason. There is lack of resources and due to the resource shortage we put the responsibility (of environmental improvement) on the government. In fact, our number of children is huge and due to that we lack resources. We have 10 breads for 5 people not for 12 people. They are not sufficient for 12 people.</p> <p>These are the personal matters of people. They should not hold the government responsible for this. Whether the government is good or bad, it has nothing to do with this thing... if we hold the government responsible for our domestic issues then it is wrong. Yes, we have the right to hold the government responsible but there should be a proper issue. They should be caught for their irresponsibility, but we do not look towards ourselves.</p>
<b>Limited support from Government</b>	<p>Internals\\SME 7 - § 2 references coded [ 1.62% Coverage] Reference 1 - 0.36% Coverage</p> <p>Look at the misery, it is the government that is not providing us the power/electricity and due to them we have to import the generators.</p> <p>Reference 2 - 1.25% Coverage</p> <p>The situation is that, if we were paying Rs.100,000 to Rs.150,000 for gas, now we are paying Rs. 600,000 or Rs. 800,000 or at times Rs. 10,000,000 per month for the gas cylinders. Such is the huge difference in the price of LPG. Interestingly, even if the duty on LPG does not change, its price changes so rapidly that we get surprised with the fluctuations. Although it is a part of petroleum products but they have not reduced its price to the</p>

	extent as they have for petrol...
<b>Environmental barriers – Internal</b>	
<b>Rigid attitude of labour</b>	<p>Internals\\SME 7 - § 1 reference coded [ 0.42% Coverage]</p> <p>Reference 1 - 0.42% Coverage</p> <p>I wish to shout while telling them that what you are doing. For example, even after providing them the safety shoes when they do not wear those, I get offended...</p>

## Appendix-XI: Ethical approval



The Open University

From Dr Duncan Banks  
Chair, The Open University Human Research Ethics Committee  
Email duncan.banks@open.ac.uk  
Extension 59198  
To Aqueel Imtiaz Wahga, FBL  
Subject *"Microfoundations of Environmental Engagement of SMEs in Developing Countries: A Study of Contemporary Practices and Interventions in the Leather Sector in Pakistan."*  
Ref HREC/2014/1730/Wahga/1  
AMS (RED)  
Submitted 4 September 2014  
Date 15 September 2014

### Memorandum

This memorandum is to confirm that the research protocol for the above-named research project, as submitted for ethics review, has been given a **favourable opinion** by the Open University Human Research Ethics Committee. Please note that the OU research ethics review procedures are fully compliant with the majority of grant awarding bodies and their Frameworks for Research Ethics.

Please make sure that any question(s) relating to your application and approval are sent to [Research-REC-Review@open.ac.uk](mailto:Research-REC-Review@open.ac.uk) quoting the HREC reference number above. We will endeavour to respond as quickly as possible so that your research is not delayed in any way.

At the conclusion of your project, by the date that you stated in your application, the Committee would like to receive a summary report on the progress of this project, any ethical issues that have arisen and how they have been dealt with.

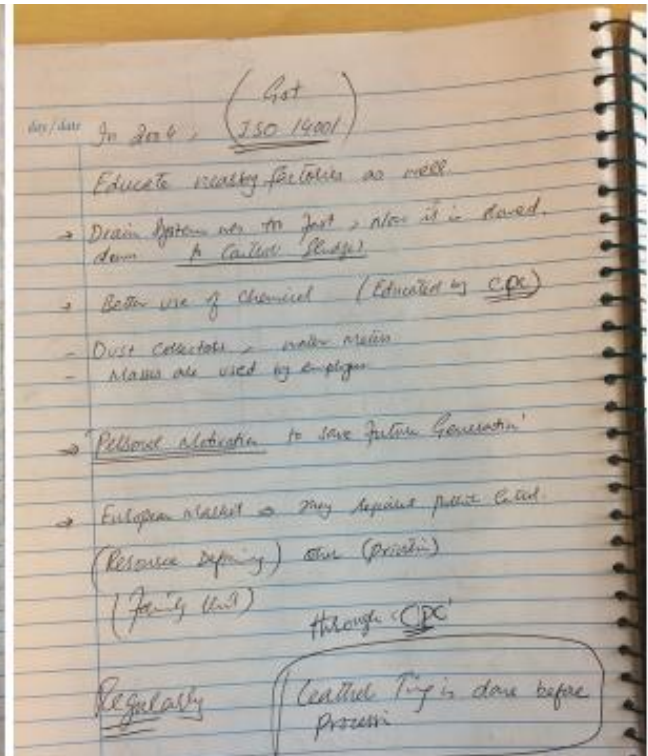
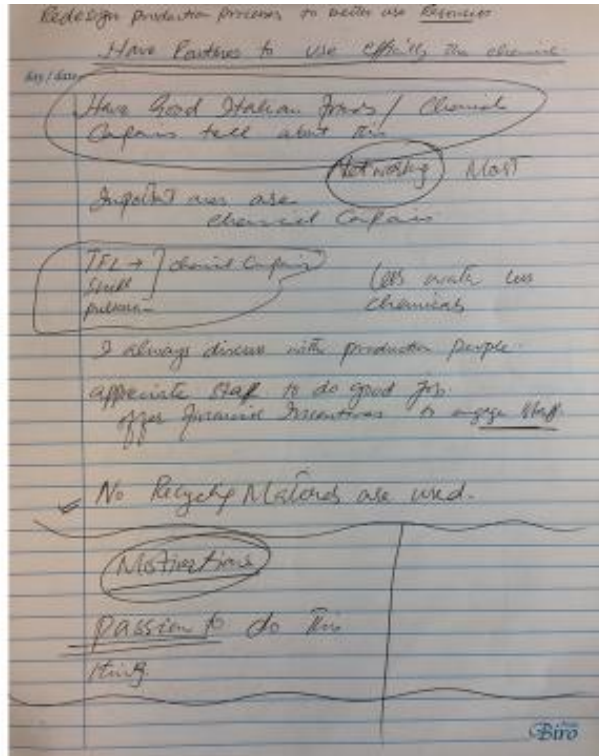
Regards,

Dr Duncan Banks  
Chair OU HREC

The Open University is incorporated by Royal Charter (number RC 000391), an exempt charity in England & Wales and a charity registered in Scotland (number SC 038302)

HREC\_2014-1730-Wahga-1-approval

## Appendix-XII: An illustration of fieldwork journal





**Appendix-XIII: Representative photographs from field visits**

**Environmentally distanced  
leatherworking SME**



**Environmentally progressive  
leatherworking SME**



**Environmentally distanced  
leatherworking SME**



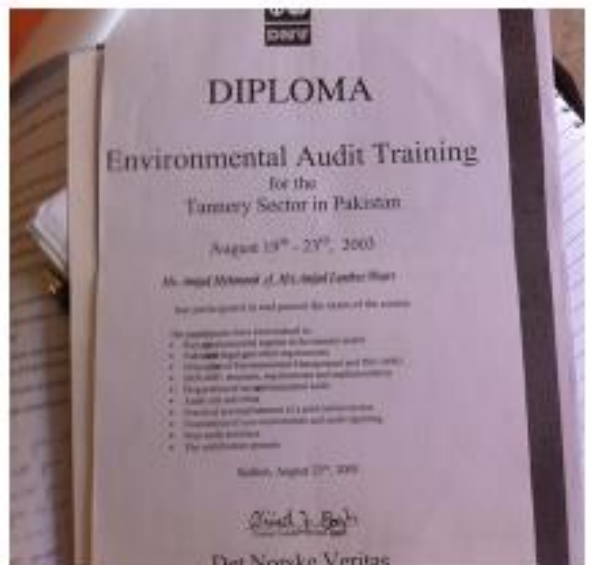
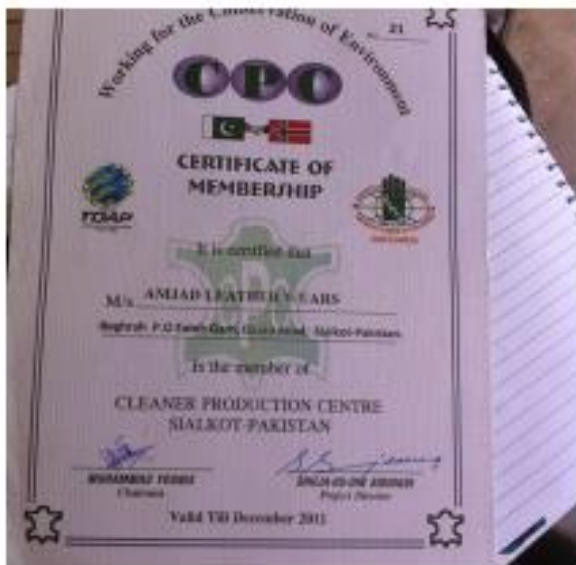
**Environmentally progressive  
leatherworking SME**



**Environmentally moderate smaller leatherworking firm displaying posters for educating uneducated/less educated labour**



**Training programmes of intermediary organisations**



**R&D facilities of an environmentally moderate tannery**



**R&D facilities of a resource-rich environmentally progressive tannery**



**Cluster level combined effluent treatment plant**



**Firm level wastewater treatment plant**





**Energy efficient steamer for water heating  
in an environmentally moderate firm**



**Solar water heating system in a resource-  
rich environmentally progressive firm**

